NATIONAL MUSEUM OF VICTORIA

26

RECORDS

OF THE

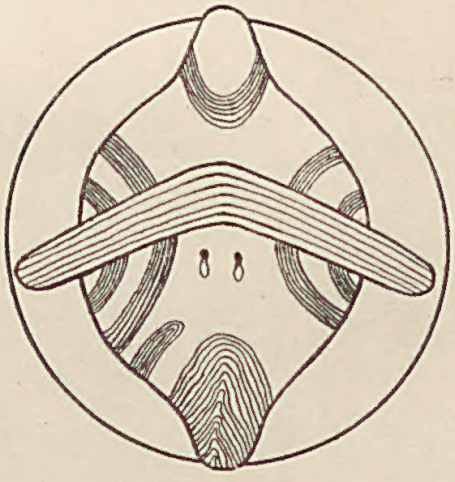
SOUTH AUSTRALIAN MUSEUM

Vol. XII

THE FIRST HUNDRED YEARS OF THE MUSEUM — 1856-1956

by

Herbert M. Hale



Adelaide, 1956

Printed by Publishers Limited, 110 Franklin Street, Adelaide

Museum Victoria

72051

'Everything we *acquire* dies with us and our sons are less ours than those of our race. Nothing of the human past has impregnated the human beast.

The civilization of ants is written in their chromosomes, that of man resides not in men but in libraries, museums and in legal codes.'

—A French Biologist.

Preface

Nine years ago there appeared a brief history, prepared by the writer, of the natural history museum in South Australia; it dealt with the vicissitudes of the collections in different buildings during four rather distinct periods of time. The same plan, with considerable amplification, is carried out in the present volume to cover a century of activities.

An effort has been made to outline the process of gathering together and housing, despite set-backs and difficulties, of the present important collections — ethnological, zoological and mineralogical. Most of the families notable in the progress of South Australia assisted the Museum, and one cannot speak too highly of those who devoted so much of their lifetime to the welfare of the institution.

It has been quite impossible, of course, to name more than a few of the tens of thousands of donors of zoological, ethnological and other material. Furthermore, space will allow mention only of the more important accessions.

Recognition is due particularly to the public spirited citizens who helped the limping Museum along its thorny path during the first half-century of its existence. It is hoped that as a result of this history the problems and difficulties arising in the establishment of natural history collections worthy of the State will be appreciated; also that the various means whereby these collections were secured may prove of interest. Today none can doubt that the effort has been successful, and the Museum has much to be proud of. The significance of the collections as study material is evidenced by the fact that research workers from far and near visit the South Australian Museum; their enquiries are varied, ranging from subjects as far apart as meteoritics and mites, giant extinct marsupials and minute radiolarians.

Here is a legacy not only of value for posterity but with the passing years becoming increasingly important—indeed essential—to students in fields both economic and academic.

The unsuitability and insufficiency of the accommodation provided for the functioning of the Museum must be stressed. This fact is evident throughout the whole history of the South Australian institution and is emphasised in the hope that the mistakes of the past may never be repeated.

In conclusion I wish to express appreciation of assistance rendered by Messrs Norman B. Tindale and Herbert T. Condon, of the South Australian Museum, while my best thanks are due to Mr. J. McLellan, of the Archives Department, for his able co-operation in gathering some of the data recorded herein.

Herbert M. Hale.

Foreword

This is the story of a struggle to establish a Natural History Museum in an Australian State which for a long period was far from wealthy.

The Author, Herbert Mathew Hale, O.B.E., has been associated with the South Australian Museum for a long time. He first came on the staff in 1914 as assistant to the late Edgar Ravenswood Waite, Director from 1914 until the time of his death in 1928. At a relatively early age the Author of this History in turn became Director. Throughout his recapitulation of activities of the Museum during 100 years there runs a thread of difficulties and disappointments, showing how its fortunes have fluctuated with those of the State.

Notwithstanding a perennial lack of adequate accommodation the South Australian Museum now possesses large and important collections —in some cases unrivalled collections. I might mention, for example, that the Australian ethnological material, particularly from South Australia and the Northern Territory, is probably the largest and most representative in existence today: that insects in the entomological collection number two million or more: that the mineral collection, particularly as representing Australian mineral occurrences, rank with the best in Australia and the tectite collection is unique in the world.

Although much of the fauna of South Australia, particularly that occurring in the vicinity of Adelaide, was sent abroad during the previous century, the Museum is indebted indeed to its earlier enthusiastic supporters. It is obvious from the Author's account that, from its inception, the Institution has been fortunate in having a long procession of enthusiastic curators and research workers, while it owes a great deal to influential citizens who have rendered sterling service, quietly and unobtrusively, ever since its first beginnings.

In the culmination of this century of concerted effort, undoubtedly much credit is due to Herbert Hale himself. During his period at the helm the Institution has gained stature by the quality and merit of its research and publications.

In sifting the records and compiling this historical review nobody could have been better qualified than the Author. He is to be congratulated on the result achieved.

Douglas Mawson.

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The South Australian Institute Museum 1856 - 1882

Early Days

On August 29, 1834, there was founded in London a short lived society "The South Australian Literary Association"; this was just a fortnight after South Australia had been erected as a British province; the members were "gentlemen intending to emigrate." Three months later the title was amended to "The South Australian Literary and Scientific Association."

An inaugural address was delivered on September 5, 1834, by Richard Davies Hanson to a group of people, some of whose names were to become famous in the history of our State. South Australia owes much to Hanson, then a young man. A quarter of a century later he became Chairman of a Select Committee which led to the foundation of the South Australian Institute and its Museum. He was the second Chief Justice of the colony, the first Chancellor of the University of Adelaide (Kt. Bach. 1869).

Inspired by Hanson, members of the "South Australian Literary and Scientific Association" then set out to increase their knowledge of the newly discovered country they were about to adopt and a series of papers was prepared during the same year. Amongst addresses submitted, one by W. M. Higgins dealt with the geology of Australia; another by Dr. Edward D. Wright was "On the Phrenology and the Natural Character of the Aborigines of South Australia," while a third "On the Natural History of Australia" was presented by Dr. John Palmer Litchfield; the latter detailed the structure and habits of the dog-faced dasyrus, the wombat, the platypus and the kangaroo. Litchfield later became one of the pioneer medical men in South Australia.

These people, eager to learn something of the new country, soon experienced at first-hand the problems and perplexities confronting the

colony; they encountered the Australian aboriginal and the curious fauna and flora which already had attracted so much interest.

On December 28, 1836, the first Governor (Captain John Hindmarsh) landed at Glenelg and established the Government; the population of the colony, apart from aboriginals, then numbered 546. Interest in the fauna, flora and minerals of the new colony was intensified in Institutions overseas and the British Museum was soon in the field. In 1838 Lord Glenelg, Secretary of State for the Colonies, sent to Governor Hindmarsh a despatch making known the desire of the Museum of London to receive "Specimens of the Natural History of the Colonies" The despatch in detail was printed in the *South Australian Gazette and Colonial Register* and it was noted that 300 copies were available "of a brief Code of Directions for Collectors of Natural History, drawn up by the Officers of the Museum, and containing some suggestions which may be useful to persons inexperienced in the selection and preservation of Mineralogical, Zoological and Botanical Specimens".

A few of the colonists, amateur naturalists, commenced to gather together, for their own pleasure and information, geological, mineralogical and natural history material, and so formed a number of small private "museums". Some examples of these early day interests have been preserved, including the oldest specimens in the Museum — 29 South Australian birds, collected and mounted in Adelaide and sent to the London Office of the South Australian Company. The letter advising their despatch to London bore the date of October 22, 1838. Through the good offices of H. P. Moore (then Adelaide manager of the Company, and a member of the Board of the Public Library, Museum and Art Gallery of South Australia) these were presented to the South Australian Museum in November, 1928. The birds, mounted approximately 120 years ago, are still in good condition.

During the years 1838—1841, the second Governor, Colonel George Gawler, encountered serious difficulties which culminated in financial disaster. Commencing from mid-1841, however, the rigid administration of Gawler's successor, Captain George Grey, aided by expanding agricultural and pastoral production, and the effects of the discovery of rich deposits of copper at Kapunda and Burra, gradually brought the state of the Colony into a favourable condition.

While Governor of South Australia, Grey sent to the British Museum many animals which are nowadays rare. For instance, amongst the material forwarded to England by him were specimens of a Rat-Kangaroo *(Caloprymnus)*, of which no further examples were seen until 90 years later! It was not realized for a long time that animals and plants readily obtainable at this period might not easily be replaced.

In 1838-9, during his expeditions in Western Australia, Grey discovered the so-called Mountain-Devil. A year or two later Gray of the British Museum described Grey's specimens of the new lizard, naming it *Moloch horridus;* not long afterwards this spiny reptile was found to occur also in South Australia.

Little attention seems to have been given at the time to the desirability of retaining in Adelaide a series of the weapons, baskets and other utensils of the local aboriginals. Today we have a mere handful of specimens relating to the Adelaide tribe, *(Kaurna)*, apart from the numerous stone artefacts obtained from the long-deserted camp sites and the food-remains in kitchen middens.

With finance in a happier state in the youthful colony a number of private individuals became more interested in securing and forwarding what were at the time "curiosities" to their friends in the Old Country; so much so that there was sufficient work for a local taxidermist and professional collector. In the *Adelaide Examiner*, January 7, 1843, there appeared the following enterprising notice:

PRESENTS TO ENGLAND

The undersigned begs to inform his friends and the public that he has on hand an extensive and very superior collection of STUFFED BIRDS AND PRESERVED INSECTS AND REPTILES, well adapted for the selection of those who desire to send to England, choice and unique specimens of the Ornithology, Zoology and Etymology [sic] of this colony. He will be happy to treat with gentlemen or ladies intending to send collections to their friends or who may be returning to England.

Robt. Hall.
Ornithologist.
Currie Street.

Robert Hall procured a living specimen of the Spiny Anteater *(Tachyglossus aculeatus)* which he showed to all who called at his establishment. It was fed upon bread and milk and white ants (termites) and remained alive for several weeks. He obtained also several specimens of the Platypus "which he stuffed with great care"; Charles Algernon Wilson, a naturalist and prolific writer to the press, sent one of these to a relation in London, who wrote to say that, "it is not equalled in size . . . . . by any in the British Museum". This last remark is significant as it suggests that the specimens may have come from South Australia. Ellis Troughton in his *Furred Animals of Australia,* 1951, states that the inland race of the Platypus "occurring west of the Dividing Range in New South Wales, and along the River Murray, into South Australia, considered to be decidedly larger, was named *Ornithorhynchus anatinus triton*". Grey, while Governor of the Province, 1841-5, sent a specimen of the Platypus to the British Museum.

Founding of the Museum

The establishment of a natural history museum in South Australia was considered at a very early stage in the history of the State. An evanescent body, the "Natural History Society of South Australia", was formed on December 13, 1838, "at a meeting of gentlemen held in the court-house at Adelaide", with His Excellency Lieut. Col. George Gawler as Honorary President; it had "for its object the cultivation of the Science of Natural History in all its branches, and more especially of the Natural History of South Australia". Among resolutions unanimously adopted was one stating that "Donations of books and specimens towards the formation of a library and Museum will be received by any of the Officers of the Society". (*South Australian Gazette and Colonial Register*, Dec. 15 1838, p.4.). That this desire for a Museum was quickly implemented to some degree is evidenced by "Government Notice No. 35", July 10, 1839, emanating from the Colonial Secretary's Office, to the effect that:

> His Excellency the Governor acknowledges the receipt from Mr. Williams, Deputy Storekeeper, for the Colonization Commissioners, a collection of weapons and instruments used by the natives in the neighbourhood; from J. B. Harvey Esq., collections of shells from Kangaroo Island, for the Colonization Commissioners and for the Museum at Adelaide; and from J. Gould, Esq., F.L.S., a Synopsis of the Birds of Australia, in four parts, for the Adelaide Museum. *(South Australian Gazette, July 11, 1839, p.2)*

In these early efforts, however, by far the most potent influence was that of The Adelaide Philosophical Society, founded early in 1853 and about 27 years later becoming The Royal Society of South Australia under the Patronage of Her Majesty Queen Victoria. Very soon after its inception the Society pressed indefatigably for the establishment of a South Australian Institute, with as one of its functions the formation of a Natural History Museum. As a result of influence brought to bear upon the Government of the day, *The South Australian Institute Act* was passed on June 18, 1856. The preamble states that "it is expedient to establish and incorporate a Public Institution, to be called 'The South Australian Institute' to comprise a Public Library and Museum". The Institute was to be administered by a Board of six, three appointed by the Governor and three by the Societies which it had authority to incorporate. The Act also set forth that:

> It shall and may be lawful to and for any person or persons, bodies political or corporate, society or societies, their heirs and successors, and particularly for 'The South Australian Library and Mechanics' Institute', to give and deliver to, grant, assure, devise or bequeath, to the use and benefit of, or in trust for the said Body Corporate, any messuages, lands, tenements, rents, annuities, and hereditaments whatsoever, and any

library books, maps, prints, pictures, goods, chattels, minerals, specimens or any other effects or articles whatsoever, calculated for the formation of a Museum; all which messuages, lands, tenements, rents, annuities or hereditaments, and all which library, books, maps, prints, pictures, goods, chattels, minerals, specimens, or effects as aforesaid, the said Body Corporate are hereby authorized and enabled to receive, accept, and hold.

A short amending act was passed during the same session of Parliament to clear up some defects in the original act.

The South Australian Library and Mechanics' Institute mentioned in the act was in fact the precursor of the South Australian Institute; it was formed in 1848 by a coalition of two previously separate bodies, "The South Australian Subscription Library" and "The Mechanics' Institute". At the time of the passing of the act the Library and Mechanics' Institute was housed in Neales' Exchange, situated slightly south of Gresham Place in King William Street, a site now occupied by the Commercial Bank of Australia Limited.

Not long after the act was passed the Government appointed as its representatives the Rev. James Farrell, Anthony Forster, a member of the Legislature, and Benjamin Herschel Babbage, a member of Parliament. The new Board met for the first time on July 18, 1856, at the library of the Legislative Council Chamber. The question of taking over the books, furniture and other effects—as well as the liabilities—of the Library and Mechanics' Institute was discussed. All formalities were completed by the end of the year, when the recently appointed Secretary (Nathaniel Hailes) produced a document authorising the Board to administer the property of the late Institute; the transfer was signed by the Chief Justice, Charles Cooper (Kt. Bach. in 1857), the Colonial Secretary (B. T. Finnis) and the Colonial Chaplain (Rev. James Farrell) as trustees of the former institution.

The Legislative Council provided accommodation for the first four meetings of the Board; thenceforth they met in the former committee room of the Library and Mechanics' Institute in Neales' Exchange, which was to become the rented headquarters of the South Australian Institute until 1860.

In August 1856 the Institute received its first grant, the Government having paid to the South Australian Banking Company the sum of £350 to the credit of the Board.

Within two months of taking office, the Board began its endeavours to obtain material for the Museum; in September, 1856, it was reported that the the Directors of the South Australian Mining Association and others had been approached and had promised mineralogical material. As a result what was then regarded as "a very extensive and interesting

collection" was presented from the Burra and other mines. Before the end of the year offers of further donations were received—geological specimens from Kangaroo Island, copper ores and, from the aforementioned Charles Algernon Wilson, who was now a member of the Philosophical Society, the earliest entomological collection to be mentioned.

In a long article "On the Formation of a Museum" published in *The Examiner* (Adelaide, May 14, 1853), Wilson had referred to his and other entomological collections in South Australia:

> The insect population is exceedingly abundant varied and beautiful, but this is if possible less known than any of the other classes of our Natural History; and as far as I am aware, there are not half a dozen private collections that will bear that name in this colony. If the formation of a Museum were determined on I would gladly offer to begin this (the Entomological) department with the donation of my duplicates; and add to them from time to time from my collection, now of fifteen years standing. I could also offer many English specimens, interesting as being those of the native place of most of us; and to these I would also add others as soon as obtained from the mother country. There are now 2,000 distinct South Australian species in my cabinet. . . . This class of Natural History being so numerous in Australian species, which are much prized by English Entomologists, I have at different times sent home upwards of 6,000 specimens, and about 20,000 have passed through my hands during my residence here.

Early in 1857 the minutes of the Board record the first request for exchange of Museum specimens; this took the form of a circular from George French Angas, the eldest son of George Fife Angas, and then Secretary of the Australian Museum in Sydney.

Before the end of the same year there had been landed in South Australia the first gift to the South Australian Museum from its erstwhile Governor, Sir George Grey (previously Captain Grey), who showed a practical interest in the institution for a long time. This donation consisted of "a collection of specimens" from Cape Colony.

Insofar as fossil vertebrates are concerned, the first really exciting discovery was made about July, 1857, when a certain Thomas Wigley discovered bones in the bank of the River Murray "above Moorundee". In September, C. A. Wilson offered to convey these bones to England and to submit them to Professor Richard Owen for examination. Wilson was asked to see Wigley, prepare the bones for transport and endeavour to obtain others in possession of Captain A. H. Freeling, (Surveyor General of South Australia) for transmission also. This was done, and Wilson shortly after left for the Old Country, on the *Havilah*, with both collections.

The first purchase of zoological material is noted in 1858, when £50 was expended in order to acquire a large collection of Mollusca.

An item of interest in 1859 was the purchase for £4 of fossils "taken from the quarry" near Government House. Two cases of birds, acquired during the same year, probably constitutes the first purchase of recent vertebrate material.

So began the accumulation of specimens for the embryo Museum and at its first meeting, held on October 12, 1857, the Board expressed its opinion that:

As regards a museum the prospects of the Institute are most satisfactory. Extensive collections of great and varied interest await only a room for their reception. The proprietors of mines in this colony have, in all instances, complied with the request of the Governors to be furnished with specimens characteristic of their several properties, so that at its opening the museum will exhibit an epitome of the mineral riches of South Australia. Many valuable presents are also promised by private individuals. His Excellency Sir George Grey writes from Cape Town, in reply to an application made on behalf of the South Australian Institute, that he has directed numerous interesting specimens to be collected and forwarded hither, including a complete series of the copper ores of the colony over which His Excellency presides. The Governors believe that when the museum is established numerous other additions to its contents will be received from abroad, and that many of our own colonists, who are known to possess miniature museums, will be anxious to incorporate them with the public collection.

Meanwhile a search was being made for suitable quarters but without satisfactory results; in fact, within three months of their appointment, members had come to the conclusion that the best plan to pursue would be to ask the Government to grant £3,000 "for the purpose of erecting rooms on public land".

In April, 1857, the Secretary to the Board was instructed to prepare a letter asking that a larger amount, £4,000, be placed on the estimates of expenditure for erection of a building for the Institute. The following month a reply was received from the Chief Secretary stating that if new Parliament Houses should be decided on the present Legislative Buildings would be dedicated for use of the Institute and that "should the building not be available for this purpose at all, or only at some distant period, the Government will have designs and estimates prepared for the erection of a suitable building for the Institute in some other locality".

Three months later, members of the Board inspected two proposed sites for a new Institute, in the neighbourhood of the Houses of Parliament.

The Adelaide Philosophical Society, anxious for affiliation with the Institute, again became active. The Honorary Secretary, John Howard Clark, penned a letter to the Board, who received it in September, 1857,

enquiring what steps were being taken to procure the restoration of the required amount of £4,000 to the estimates for 1858 and stating that it was the wish of his Society to co-operate in any movement that might be made with that object in view. Next month Clark was elected to the Institute Board to replace Babbage, who had resigned, and he remained an influential member for 15 years.

Further appeals in most urgent terms were made to the Government, Clark acting as it were in a dual capacity, having at heart the interests of both Institute and Philosophical Society. Clark was held in such high esteem by the last-named Society that in 1864 he was presented with "a beautiful and complete photographic apparatus . . . in acknowledgement of unwearied and valuable services rendered by him during the period of his Secretaryship". It is practically certain that were it not for Clark's strenuous efforts the South Australian Institute may not have been founded at so early a date.

A year later the Board had high hopes of "speedily obtaining a building adequate to the objects of the Institute, and not discreditable to the intelligence and opulence of the colonists". The Governors were then in communication with the Commissioner of Public Works and the Colonial Architect concerning a site as well as the plans for the building and had "reason to believe that the one will be chosen, and the others prepared, with all possible expedition."

The site of the new Institute now became a matter of much public interests, and much controversy. The site already mentioned, and situated in the vicinity of the Houses of Parliament, by no means met with popular approval; public meetings of protest were held and deputations arranged. Again the Philosophical Society came to the fore and members expressed forcibly their opinion of the site in a memorial to His Excellency Sir Richard Graves MacDonnell, at the time President of the Society. Clark prepared the draft which read:

Your memorialists have learned with regret that it is proposed to erect a building, to be devoted to the objects of the Institute, in a locality which appears to them to be objectionable in many respects; inasmuch as the site selected is so much lower than North Terrace, that not only will the building (which should ultimately become one of the chief ornaments of the city) be almost hidden from sight, but its situation will be neither convenient for public access, nor advantageous for meteorological observations, whilst the steep gradient of the City Bridge Road will necessarily render the approaches to the building unsafe for the large number of vehicles, on the occasion of lectures or soirees connected with the Institute or its affiliated societies.

. . . . . Inasmuch as the Houses of Parliament are, and long will be, amply sufficient for the requirements of the colony, it is needless to leave unoccupied the excellent site for an important public building,

NORTH TERRACE, ADELAIDE, 1864

Showing South Australian Institute and land subsequently dedicated for Museum, Library and Art Gallery purposes

which could be made available at the corner of North Terrace and the City Bridge Road, and which is at present said to be preserved for future new Houses of Parliament. Your memorialists pray that Your Excellency will be pleased to direct, that the building for the S.A. Institute may be erected upon the site last mentioned, or upon some other site better suited to the present requirements and ultimate importance of the Institute than that now in contemplation.

As the result of this and other public disapproval the site finally agreed upon by the Government was that upon which the Institute stands today, at the corner of Kintore Avenue and North Terrace.

In October, 1859, the Board expressed pleasure at the rapid progress being made with the Institute Building, and voiced the hope "that long ere the time comes round for the next annual meeting this much-desired object will have been accomplished and the South Australian Institute have been permanently established in an edifice which will be a credit to the colony of South Australia, an ornament to the city of Adelaide, and a means by which the Institute will be enabled to step forth from its present character. . . . . and become a most important means of promoting the intellectual advancement of the whole colony".

During the year 1860 there was a delay, apparently due to misunderstanding about shelving and other fittings, over which a great deal of argument occurred between the Board, and the Colonial Architect and members of the Government.

Finally the building itself was completed and the fourth annual meeting of members of the South Australian Institute was held therein in October 1860. This great occasion was marred by the fact that the rooms were unfurnished and the arrangements for lighting incomplete. It was reported that as circumstances made it absolutely necessary that the Institute be removed from the rooms which it had previously occupied the Board was compelled to enter upon the occupation of the new building as early as possible.

A special request for a retort house to provide gas for illumination had been made some time before and as this was now erected at the rear of the Institute everyone was looking forward to the prospects of an inaugural soiree, with which it was proposed to open the new Institute.

The holding of evening social gatherings was quite a feature in the early years, the first of them having been arranged soon after the Institute was inaugurated; they were attended by all prominent persons of the day in Adelaide. The formal opening of the new building by the Chief Justice, Sir Charles Cooper, duly took place on January 29, 1861, at a soiree held for the occasion; arrangements were made for providing refreshments for 1,000 guests and visitors.

After the opening of the Adelaide Town Hall in 1866, a soiree was held in that building, as attendances in the Institute had become limited to 700 because of insufficient accommodation. The following year, however, these functions were discontinued by the Board of the Institute as so many entertainments of a similar character were being arranged in the city.

Free lectures also were delivered in the Institute, and apparently were well patronised. The amounts expended on these activities for a while exceeded the sum spent on the Museum, apart from salaries.

The Adelaide Philosophical Society became affiliated with the South Australian Institute in October, 1859; incidentally, it may be noted that clause 3 of the terms of incorporation states:

> That the Philosophical Society be allowed to preserve and exhibit in the Museum of the Institute any specimens of natural history or other objects of interest it may from time to time become possessed of, such specimens being thenceforward regarded as the property of the Institute.

The Board of six allowed for in the act of 1856 was not complete until 1859. The three original Government appointees had carried on until the library subscribers, regarded as a body incorporated for the purpose of the act, in 1857 elected John Howard Clark, who it will be remembered was also secretary of the Philosophical Society. Now, in 1859, the South Australian Society of Arts as well as the Philosophical Society had become incorporated with the Institute and appointed respectively as their representatives William W. R. Whitridge and B. H. Babbage; the last named had resigned in 1857 as a Government appointee and had been replaced by a member of the Legislature, Lavington Glyde.

In 1863 a new Institute act was approved, under which the library subscribers were authorised to elect two representatives on the Board, which thus was increased in number to seven.

Although a relatively large collection had been acquired during the three years following the establishment of the Institute Museum, it soon became apparent that more active steps should be taken if adequate representation of the local vertebrate fauna was to be ensured.

The Board in 1857 had reaffirmed its view that the formation of a museum was "one of the principal objects for the attainment of which the Institute was established". Far-sighted men, they foresaw the eventual depletion of the indigenous animals but could not realise just how quickly some of the then familiar creatures would cease to be readily available. The Board pointed out in its third annual report that in its opinion it "is highly desirable, and, indeed, almost a national duty, to preserve for posterity the forms and semblances of the various singular

FREDERICK GEORGE WATERHOUSE

Curator, 1860-1882

and beautiful animals and birds, reptiles, and insects now inhabiting Australia, ere they shall have finally disappeared before the footsteps of the white man".

This is as true today as it was nearly a century ago—but time is running out.

A wistful desire by these early colonists for the culture denied them by their isolation is revealed in a decision that overseas collections must be brought to South Australia in order that the rising generation might know something of the Old World. That the feeling of isolation was real is indicated by the following statement; "remembering that though we are, most of us, if not all, familiar with the museums and collections of the countries we have left, yet the boys around us, the future men and women of Australia, are not, and as regards the majority of them probably never will be".

The First Curator

Frederick George Waterhouse was the first Curator of the South Australian Institute Museum. He was the youngest brother of George Robert Waterhouse, the first curator of the Entomological Society of London. He came to Australia in 1852 and was at first engaged in surveying, but as an ardent naturalist he collected a good many zoological and other specimens before his appointment to the Museum in 1860. He was born in 1815, so that when he took office at the Museum he was not a young man.

Waterhouse, writing from his home "Wandeen" at Burnside, sent a letter to the Institute Board in June, 1859, offering his services in the capacity of Curator of the Museum. In September of the same year it was resolved "That it be proposed to appoint him Curator of the Museum whenever the time arrives for filling up the same, at a minimum salary of £50 per annum and increasing in proportion to the time occupied to a maximum of £200 per annum and that meantime he be requested to prepare an order to the extent of £50 for materials to be obtained from England."

The Board, obviously pleased with this development, reported to the following annual meeting of members of the Institute that they had "already appointed to be curator of the Museum Mr. F. G. Waterhouse, a gentleman, whose connection with the British Museum, and general scientific and practical knowledge of zoology, and of the management of museums in particular, point him out as eminently qualified for the office. The appointment is, however, for the present, honorary, the regular duties and salary not commencing until the building is completed. At the request of the Board, Mr. Waterhouse has drawn up a list of such

articles as are required for preserving, preparing, and mounting specimens, an order for which will be sent to England by the next mail".

Waterhouse did not receive the first instalment of his small remuneration until October, 1860, at which time the salaries for the whole Institute "including cleaning and gas making" totalled £534/10/-. He at once commenced the task of classifying and arranging for exhibition the material in hand, and also communicating with persons likely to be of assistance in obtaining representative collections of the fauna, minerals, etc. of the Colony, and likely to present some of the foreign material which, throughout the whole period of his curatorship he strove diligently to acquire.

It was in 1860 that the Museum secured as a donation from William Owen, M.P. a large series of articles from Fiji, including tapa cloth, clubs, spears and clothing, and also some Malayan models of pirate praus; thus, as far as can be ascertained, the Museum secured the first of its now extensive Pacific Island and Indonesian collections.

At this time the Government was asked to provide wall-cases for the three rooms originally allotted for Museum purposes and after some delays a contract for their erection was accepted. The Philosophical Society had already expended £50 for the purchase of standing cases and these had been installed, an earnest of the firm resolve of the Society to stand behind the Museum, even at a period when the Society itself was rather poverty stricken.

In October, 1861, the Board was complaining that the decreased grant made by the Government during its previous financial year (July 1, 1859 to June 30, 1860) had interfered considerably with the progress of the Museum; when the estimates for this year had been laid before Parliament it had been found that the grant proposed for carrying on the affairs of the Institute was no more that the minimum sum named in the act, *viz*—£500. Despite their straitened circumstances, however, the Board arranged for the purchase of John Gould's celebrated books dealing with the birds and the mammals of Australia. They had been anxious to acquire these books for a long time and record the fact that they considered the plates to be amongst the most valuable and beautiful illustrations of natural history that had ever been published; this statement scarcely could be challenged today. The great cost had prevented the purchase of Gould's works, but George French Angas, as already noted then Secretary at the Australian Museum, had written to Adelaide, enclosing an extract from a letter he had received from Gould, expressing anxiety that one of the few remaining copies of his works was not in the colony of South Australia and offering to send the books at once and to receive payment at the rate of £30 per annum.

Fortunately, it was considered that so liberal an offer could not be refused and that a more favourable opportunity of acquiring Gould's books might never recur—and so they were ordered.

The grant for the following year was increased to £1,000, so that steady and perceptible progress was achieved. The cases for the Museum having been completed and the available specimens arranged therein, the Museum, then occupying only one room, was opened to the public at the beginning of January, 1862; prior to this the aforementioned Fijian collections had been exhibited from time to time.

As yet the Museum had received very few skins of native mammals and birds; indeed, when the Museum was opened, a pair of white swans comprised the sole ornithological exhibit. In spite of various applications and resultant promises, the only mineralogical specimens which had been forwarded by the various mining companies in South Australia were those from the copper mines at Burra and a couple of samples from Wallaroo, although some minerals, fossils and geological material from various parts of the Colony had been presented by private individuals. Then an appeal was made to the public by the Board. "The growth of the Museum must greatly depend upon the liberality of private individuals and the interest taken in it by the public at large, and the Board are anxious that it should be generally known that the Curator is now able to receive any contributions, and that he will be glad to communicate with any one who may be disposed to assist him in procuring suitable specimens, either of animals, birds, insects, fishes, snakes, or minerals".

Notable names began to appear in the lists of donors of money or specimens. In 1864 for example, 142 persons, as well as the Australian Museum in Sydney, are mentioned, among them being His Excellency the Governor in Chief, the Lord Bishop of Adelaide, the famous John Gould of London, E. Pierson Ramsay, the well known ornithologist in Sydney, and Edward Stirling, M.L.C., the father of Edward Charles Stirling who 15 years later was to begin his career as one of the most important figures in the history of the Museum in South Australia; nine members of the Legislature together with nine members of Parliament were contributors, as well as George Fife Angas, who knowing the difficulties being experienced, contributed a liberal and timely donation of £50 "for the advancement of the Museum". None could doubt the encouragement and interest of the small community.

It appears that a Museum had been established in the Gawler Institute in 1861, for the accounts of that year show that the latter purchased material from the South Australian Institute Museum. Gawler was then a rising agricultural town, 25 miles north of Adelaide; years later the Gawler collection, quite large and still carefully preserved, was handed

over to the South Australian Museum. Country museums soon appeared in some of the other associated Institutes of the Colony. At Mount Gambier was assembled a good collection, the remnants of which were transferred to Adelaide in 1952.

In 1861, very soon after his appointment as Museum curator, Waterhouse was sent to Kangaroo Island by the South Australian Government and there collected a large number of insects and plants, the last including approximately 100 species which passed into the hands of Baron F. von Mueller, who described those which were previously unknown.

Following this, Waterhouse was engaged by the Government as naturalist to accompany John McDouall Stuart's sixth expedition, from December 1861 to December 1862, when the continent was crossed successfully. He made a collection of birds, 17 of which were sent to London, where they were reported upon by John Gould; amongst this collection was the first known specimen of the Princess Alexandra Parrot *(Polytelis alexandrae)* Waterhouse thus being the discoverer of this beautiful bird, today coveted by aviculturists and zoological gardens. Apparently the first record of Cretaceous fossils in South Australia is furnished by Waterhouse in his report on the fauna and flora, natural history and physical features on the line of Stuart's route across the Continent *(South Australian Parliamentary Papers*, 1863, ii, No. 125, pp.2—4).

Waterhouse, among other members of the party, received a Government "bonus" of £100 when the expedition returned.

According to unpublished portions of McDouall Stuart's diary, relations between Waterhouse and himself seem to have been somewhat strained at times, due probably to the preoccupation of Waterhouse in collecting creatures which he had never seen before but which were of only passing interest to Stuart, who was absorbed by his desire to cross Australia from south to north. One can imagine the difficulties of Waterhouse and appreciate the vast amount of work carried out by this naturalist in collecting zoological specimens, skinning birds and mammals, and preparing the material for safe transport. In general, knowledge of the animals and plants of South Australia in these early years is due in no small measure to the splendid efforts of Waterhouse, whose activities and influence are perhaps not sufficiently known. He was a Corresponding Member of the Zoological Society of London and a member of the Adelaide Philosophical Society, before which he exhibited numerous natural history specimens "thereby adding to the interest of the meetings"; he was elected a Vice-president in 1869. Waterhouse apparently read only two papers before the Society "On a remarkable insect— *Stylops*" and "Observations on the Palaeontology of Australia" He contributed an article on "The Fauna of South Australia" in

South Australia: Its History Resources and Productions. by William Harcus, 1876.

According to notes made by Waterhouse on his return from the Stuart exploring expedition the zoological collections at the Museum were not supplemented materially until 1863. At the end of that year there were in hand 200 bird skins, mostly from South Australia and collected by Jacob Gardner of Gawler, a taxidermist who was each month supplying 20 to 30 specimens at a very moderate charge. The mammal collection consisted of a few skins and about a dozen mounted specimens, mostly marsupials. Included in the 20 fishes was a fine tiger shark and "five species of undescribed fish from the interior". Among the 25 stuffed reptiles Waterhouse notes "two large undescribed snakes of the boa tribe from the interior". Insects and Mollusca were represented by about 2,000 specimens each, and the collection of South Australian minerals was relatively small—that of fossils still smaller. A case of minerals and rocks, 300 in all, together with a series of fossils, had been lodged in the Museum by the Philosophical Society. The promised collection of copper ores from South Africa had been received from Sir George Grey who, as mentioned earlier, retained always his interest in the South Australian Museum.

A mining fever had been sweeping South Australia for the preceding three years and more than 1,500 claims had been applied for. Twenty years before, the first of the copper-mines had been discovered at Kapunda and now many, mostly for copper, had been opened in the Mount Lofty and, particularly, Flinders Ranges—Burra Burra, Moonta, Yelta, Wallaroo, Matta Matta, Yudanamutana, Nuccaleena, Wheal Blinman and two score others, some of them quite close to Adelaide. Attracted by the relatively high wages, sturdy Cornish miners had come to South Australia —269, mainly from Cornwall, arriving in 1854. The company controlling the Burra mine, one of the richest and opened in 1845, had paid out more than one million pounds in wages by 1863. J. B. Austin published an interesting review of the mines of the colony at this time and describes in amusing detail the events leading to control of Burra Burra. After copper had been discovered in the area by a shepherd, it became necessary to purchase from the Government a special survey of 20,000 acres. One survey was taken by a body called the Princess Royal Mining Company; another was taken by a second group which became incorporated with the South Australian Mining Association. The two were known as the "nobs" and the "snobs" respectively, one representing the aristocracy, the latter the more humble tradespeople. Neither alone could find the cash for the purchase, and so the two groups united for the purpose. Immediately the survey was completed, a line was drawn through the centre of the area from east to west and lots were drawn; the snobs

became the lucky owners of the portion on which was located the rich copper deposit. Although few specimens were coming to the Museum, the ores being obtained were attractive, red oxides, rich blue and green carbonates and malachite, as well as native copper. Numbers of people made the 100 mile trip from Adelaide to see the Burra mine, no mean feat at that time, and there collected some of this showy material. Austin notes that many very beautiful specimens were "to be seen ornamenting the mantelpieces or cabinets of an immense number of houses in the colony".

During the hey-day of the South Australian mines, those associated with them and particularly the Superintendents or "Captains", many of them "Cousin Jacks", were gathering for their own pleasure the cream of the minerals coming from the near surface material; it was not until the twentieth century that most of their collections, some large and comprehensive, were donated to the Museum or, more often, were acquired by purchase.

During this year of 1863, relics of Burke and Wills were brought to the Museum by John McKinlay the explorer, who in 1861 had been chosen by the Government to head a party deputed to search for the ill-fated expedition. McKinlay had collected some minerals also during his search for Burke's party and these were added to the specimens obtained during the expeditions of McDouall Stuart.

A great deal of fossil vertebrate material was sent by Waterhouse to the celebrated Sir Richard Owen, who studied and reported upon Australian extinct mammals for 30 years or so. For example, numerous bones of the Pleistocene marsupial *Diprotodon* were discovered in various localities in South Australia. Prior to the Stuart expedition the Surveyor General, George Woodroffe Goyder, was the first to direct the attention of Waterhouse to the occurrence of remains of this huge creature in northern South Australia *(South Australian Parliamentary Papers*, 1863, ii., No. 125, p. 2). At about the same time James S. Wilson collected some bones at "Portland Bay, South Australia". Waterhouse notes as of unusual interest a collection made by Percy Wells in 1869 at Gum Creek, in the county of Stanley. The same year Filgate, of Wentworth, presented fossil remains of a Rat-Kangaroo, a *Diprotodon*, and according to Owen *Nototherium* also, found by Filgate in New South Wales, near Lake Victoria; Owen records this as Lake Victoria, South Australia. Portion of the tibia of a large bird said to have come from a cave at Mount Gambier was sent to Owen in 1872; this belonged probably to the giant species named *Genyornis* 30 years later. One of the most noteworthy fossil deposits was discovered by R. M. Robertson in the Normanville (Second Valley) district in 1879. The fossils were in a swampy area, with numerous springs, not far from Robertson's

house near Salt Creek, a rivulet flowing into the sea about four miles north of Cape Jervis. Waterhouse noted that the material included "*Diprotodon, Phascolomys, Thylacoleo,* and *Macropus.*" Many of these displayed characteristics differing in some respects from other specimens already in the Museum; recovered also were portions of leg-bones of the extinct Ratite bird *Genyornis.* During the following year Robertson donated still further collections from the same swamps and R. F. Sullivan, of Cowarie in northern South Australia, found "remains of similar character" in the Lake Eyre Basin.

Material sent to Sir Richard Owen was returned to South Australia and at the present time, over 70 years later, research is being carried out on it and other mammalian fossils in the Museum.

With taxidermists Gardner, F. Schultze and in particular F. W. Andrews employed as collectors, the zoological accessions grew apace and by 1867 there were 1,000 skins, comprising upwards of 500 species, in the bird collections, while the mammals numbered 170, including 46 species of marsupials, several rare and some recently discovered. The reptile collection had been enriched by specimens from New South Wales, Western Australia and the Northern Territory, as well as South Australia; the ethnological material, in addition to William Owen's noteworthy Fijian collection, included many specimens of the utensils and weapons of the natives of Australia and Africa.

Lack of accommodation and of financial support adequate for maintenance of the growing Museum became apparent early in the history of the Institute. By the end of 1865 contracts had been made for the purchase of exotic material and the commitments were making the Board a little anxious; already Waterhouse was "obliged to fill his cases rather with reference to their utmost holding capacities than to the proper arrangements of their contents".

A sum of £1,000 was placed on the Government estimates for 1864-5 to finance the whole activities of the Library and Museum; the last-named received £250. It was proposed that the same sum be allotted to the Institute for the year 1866, but the Board successfully made out a case for a grant of £1,500, of which £500 was applied to the Museum. When pressing their claim, the Board baldly stated that if this amount were not granted they would be compelled "absolutely and definitely to stop all expenditure on the Museum after the end of 1865", and thus risk losing the services of Waterhouse; and so continued the struggle for adequate grants.

Unfortunately neither Waterhouse nor his Board realized the importance of retaining immediately large and comprehensive Australian collections; exotic material was coveted and was solicited in exchange for specimens of our fauna, particularly birds and mammals which we

would be glad to have in the Museum today. Exchanges were conducted with other Australian Museums, however, as well as with private individuals and so the scope of the Australian collections was widened; notably, good collections were received from Western Australia and Tasmania.

Dispersal of Collections

As early as 1865 Waterhouse had set aside a large number of well-preserved duplicate bird skins to be used as exchanges. Limited resources for purchase of representative collections from other countries certainly was responsible to some extent for the lavish export of material which followed. Urged by the desire to acquire overseas fauna, and possibly influenced also by the expressed wish of his Board to show the younger colonists some of the unfamiliar animals from abroad, Waterhouse continued with enthusiasm to carry on exchanges with Museums in Europe as well as in Australia, yet in 1867 he still had available as "duplicates" for this purpose "About 500 Australian birds' skins, a few skins of rare marsupial animals, a great variety of reptilia, and various miscellaneous objects . . ." He regarded the field work of taxidermists Andrews and Schultze, operating as collectors for the Museum in various parts of South Australia, as useful in that they were supplying "specimens valuable for effecting exchanges".

By 1867 the Board had become concerned at the increasing difficulty of securing South Australian ethnological material, both for retention in the Museum collections and for exchange, seeking by advertisement donations of material, but with limited success.

During the next decade or so Waterhouse sent collections of birds, reptiles and other animals to Dr. Peters of the Royal Museum in Berlin, and to the noted Professor Kaup of Darmstadt, to the Museums at Durham College, Ile de la Re'union, Brussels, Calcutta, Nagasaki in Japan, South Africa, (Cape Colony and Natal) as well as the Museums of Australia and New Zealand; to John Gould of London and E. Pierson Ramsay with his private Dobroyde Museum in Sydney; to John Leadbeater of the Melbourne Museum; to Sylvester Diggles of Brisbane, and to a host of private collectors. Leadbeater in 1876 sent for a pair of Blue-billed ducks *(Oxyura australis)* in exchange for a Night Parrot *(Geopsittacus occidentalis)* and four other birds from the interior of South Australia.

Altogether Waterhouse sent away at least 2,000 skins of birds from South Australia and the Northern Territory. H. T. Condon, the present Ornithologist at the South Australian Museum, has gone carefully through the exchange lists and diaries which, like accession books, were kept by Waterhouse from 1860 to the time of his retirement; Condon states definitely that the named skins thus widely distributed would together

have constituted a very good representative collection of the species of birds from our State and the Northern Territory.

Certainly some noteworthy accessions of extra-Australian specimens were received by Waterhouse as overseas exchanges—South American birds from Berlin, British birds from the Durham Museum, 80 birds collected by Alfred Wallace in the Indian Archipalego, and a mass of material in all groups which it would be tedious to detail.

Some of the specimens from nearer home are of more interest today. Thus in 1868 Waterhouse was sent 55 New Zealand Birds (45 species) recent and fossil Mollusca, and leg bones of the large extinct Moas from the Geological Survey Office and Colonial Museum, Wellington; the birds, according to a letter from James Hector constituted "as complete a collection . . . . as I can spare"; he states that they are "in return for the very valuable collection of Birds which you forwarded to us". Hector regrets that he cannot supply a Tuatara *(Sphenodon punctata)* which he states is "very rare now". Adelaide secured a spirit specimen of this Rhyncocephalian two years later from Thos. Kirk of Auckland who (May 8, 1870) wrote that "it is almost extinct and has not been discovered elsewhere".

A collection of bird skins from North Queensland was obtained from Samuel White, Ornithologist from Reedbeds, South Australia in 1870. Some rare creatures were sent from the Tasmanian Museum at Hobart in 1871-2, including a skeleton and two skins of the Tasmanian Tiger *(Thylacinus cynocephalus)* a species possibly now extinct.

The almost complete skeleton of one of the gigantic Moas from New Zealand was sent to Adelaide from the Canterbury Museum by Dr. Julius Haast, who on November 25, 1872 wrote to Waterhouse stating that this, together with leg bones of three other species was being sent per S.S. *"Rangitoto"*, Waterhouse promptly, in December of the same year, sent to Haast 153 bird skins, comprising 104 species, together with three mounted lizards; all material, as usual in the case of birds, was identified. Haast was so pleased with this series that in acknowledging them he promised to put aside for Waterhouse Moa bones "until you have as fair a representation of these extinct giants as anywhere in the world".

It appears that in arranging exchanges Haast developed a pen-friendship with Waterhouse, as in a letter dated November 8, 1875, he writes "I beg to enclose my photo, so that the features of your N.Z. correspondent and friend will not remain unknown to you. I hope you will return the compliment". One wonders whether a picture of Waterhouse is still somewhere in the Canterbury Museum.

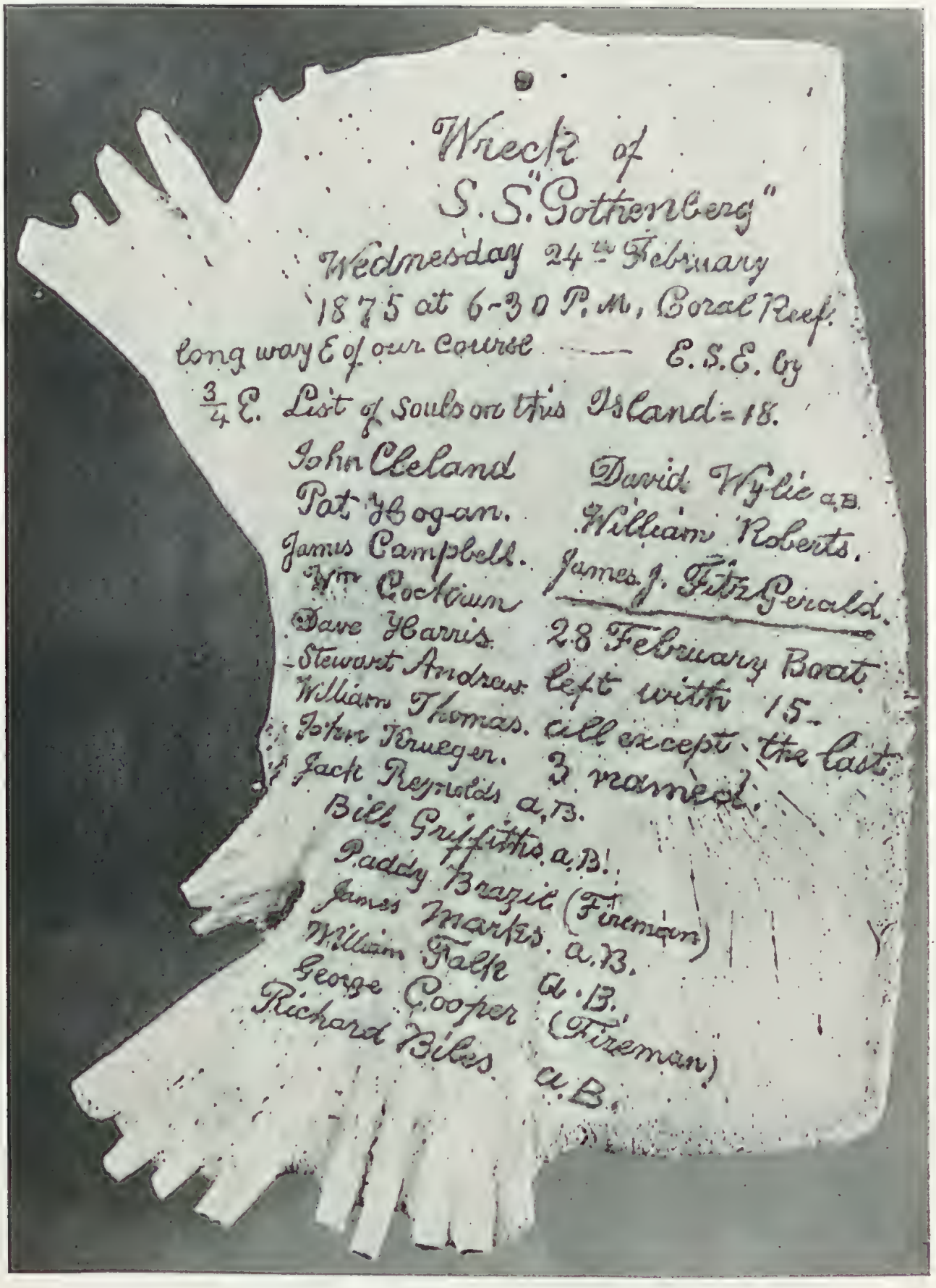
During the year 1873 Waterhouse made contact with J. Wood-Mason, Curator of the Indian Museum at Calcutta. Letters show that his

nephew Captain J. Waterhouse, Assistant Surveyor General at Calcutta and Wood-Mason's friend, was the intermediary. Wood-Mason, a student of Crustacea, as might be expected asked Waterhouse to supply as many Australian species of the group as possible, marine, freshwater and terrestrial; he laid stress on the fact that he desired particularly Squillidae (Mantis Shrimps), in which he was interested. He offered in return for spirit specimens of Crustacea "Indian animals, birds, reptiles, fishes, Mollusca and skeletons of all groups"; he asked further for a good set of Australian fresh water Mussels (Unionidae), many of our rarer mammals and so on.

For years Albert Molineux, a South Australian naturalist, actively assisted Waterhouse and freely lent his small trawl-net for the securing of marine specimens in St. Vincent Gulf and off Kangaroo Island. A very considerable collection of fishes, crustaceans and other marine creatures which Waterhouse considered to be peculiar to the Gulf were secured, and all duplicates were set aside for exchange purposes. Molineux was a foundation member of the Field Naturalists' Section of the Royal Society of South Australia; that he and his family were born naturalists is obvious; his son, Albert Edward, showed the same interest, while today his grandson, Albert Claude is an ardent field naturalist.

Waterhouse was on duty at the Museum from Monday until Saturday at noon and these dredging ventures were carried out during weekends. It would seem that often he paid the necessary expenses out of his own pocket, being rather chary of approaching the then Secretary of the Board, Robert Kay, who kept a close hand on the slim institutional purse. This gave rise to some incidental enquiries at a Royal Commission appointed to enquire into the affairs of the Institute in 1874.

Police Inspector Paul Foelsche was one of the outstanding contributors of ethnological and zoological material from the Northern Territory and continued to be a generous donor and collector for many years. An extensive collection of birds and other specimens gathered by him in 1874, together with a large number of shells collected by conchologist Walter Bednall on the north coast of Australia, were unhappily lost when the *Gothenburg* went down. This ship was wrecked on the Queensland coast on February 24, 1875. Some of the survivors landed on Holborn Island and there one of them, J. J. Fitzgerald, recorded their names on a bleached piece of the bony shell of a green turtle; the bone is inscribed on the back as "Life Log, Holborn Island". In April 1932, this relic of the tragedy was presented to the Museum by W. D. Cleland, a brother of one of the survivors, thus providing a curious link with the lost collections. A few years after this disaster, two outstanding ethnological collections made by Foelsche in the "Territory", were purchased by the Museum.



Turtle-bone log of survivors of *Gothenberg*, 1875

The first uncut Australian meteorite to come to the South Australian Museum was discovered in 1875 by James Martlew, four miles from Yardea Station in the Gawler Ranges, and weighed about 7¼ pounds; years later a slice from this Yardea meteorite was taken to America. A polished slice of the Baratta aerolite from New South Wales had been acquired in 1852 as an exchange.

In May, 1875, a suggestion was made by Charles (later Sir Charles) Todd, then one of the members of the Institute Board, that Standing Committees be formed for both Library and Museum. This course being decided upon a month later, part of the personnel of the Board was constituted a "Museum Committee", a practice which continued with successive boards for 65 years.

One of the initial actions of this Committee was to recommend that the Curator be authorized to supply the Philadelphia Exhibition Commission with such duplicates of specimens of the fauna and minerals of the colony that he could spare. As a result Waterhouse forwarded to the Philadelphia Centennial Exhibition of 1876 a "choice collection", including 112 mounted specimens of South Australian birds besides several rare marsupials and reptiles, and Australian aboriginal material. Later the specimens were handed over to the Smithsonian Institution, which sent useful material to South Australia. Unfortunately there was included in the collections supplied for the Philadelphia Exhibition a wallaby-skin native rug, or cloak, the best of its kind from South Australia in existence today.

It was considered that the collection sent to Philadelphia would assist in calling attention of Americans "who have the interests of science at heart" to the colony. Interest was stimulated by Samuel (later Sir Samuel) Davenport, who was the South Australian Commissioner at the Philadelphia Exhibition, and Waterhouse received a number of applications from America for Australian fauna, exchanges to be arranged in return.

In 1876, Waterhouse reported to his Board that visitors to the Museum were becoming more numerous and "I do not doubt if I had at command more space for exhibiting the specimens that our collections would take a respectable position in many points of view when compared with the collections of other colonies".

The South Australian Commissioners at this time requested also that an exhibit be sent to the Paris Universal Exhibition of 1878 and Waterhouse forwarded about 30 mounted marsupials, 340 "different specimens" of South Australian birds, a number of fishes and reptiles, six cases of beetles and, last but not least, an excellent collection of aboriginal implements and weapons. He reports the fact that "considerable diffi-

culty was experienced in procuring the latter, owing to the extinction of those tribes which formerly inhabited the country around Adelaide". It is rather remarkable that at this time he informed the Board that, "having lately received a large and valuable collection of native weapons and implements from the Northern Territory, I shall forward them with other things to America and elsewhere at an early date."

The collections sent to Paris were given, at the end of the Exhibition, to the Director of the Natural History Museum in the Jardin des Plantes and exchanges were asked for.

Two diamonds from Echunga in the Mount Lofty Ranges near Adelaide were exhibited in the South Australian Court of the 1878 Paris Exhibition. These had been found by two gold diggers, John Brown and John Glover, "rough as found on the Echunga Gold Field". Later they were purchased by a jeweller in Adelaide; still later, in 1949, they were bought by the Museum from a descendant of the gem dealer in question.

H. Y. L. Brown, South Australian Government Geologist, in his *Record of the Mines of South Australia*, 1899, has something to say about the diamonds in our State:

> For many years there had been rumors of the discovery of gems, including diamonds, in the Echunga Goldfield. The feeling that it was desirable to test the creditability of these statements induced the Commissioner of Crown Lands in 1879 to engage the services of an experienced gem digger, Mr. G. T. Bean, to examine the district and to report. He went over the field and stated that diamonds had been found in Long Gully and in other localities, and that Chapman's gully presented features resembling those of the diamond field at Kimberley, South Africa. He added that there were also other places in the Echunga district in which it was probable that diamonds would be found, and he recommended that a systematic search for diamonds should be organised. It is stated that more than 50 good saleable diamonds have been found in the district since the first discovery made many years ago, and that the most notable gem found was Glover's diamond, secured weighing 9¼ carats. Most of the diamonds hitherto found have been discovered accidentally in washing alluvial for gold
>
> A few specimens of Echunga diamonds, including one of a red color were purchased by the Adelaide Museum authorities.
>
> *Mount Kingston, near the Peake River.*—A diamond weighing little over 1 carat was received from this locality in 1894, stated to have been washed from auriferous gravel

The Museum Committee decided to send "native weapons, dresses and ornaments" to the Sydney International Exhibition of 1879-1880—the first of its kind to be held in Australia. The South Australian Commissioners for this were anxious to have a good collection illustrating the ethnology of the native tribes of the State. An exchange

was arranged after the exhibition, and the Australian Museum forwarded weapons and implements from the East Indian Archipelago. At this time the Museum Committee records in the minutes the opinion that during the past three or four years the returns from other museums had not constituted a *quid pro quo*.

A selection of fossils from the vicinity of Lake Eyre, together with apparently the whole of an extensive collection sent as an exchange by the Museum in Paris, were lent for the first International Exhibition to be held in Melbourne in 1880-81; the Paris material comprised a large series of reptiles, many minerals and a great variety of ethnological specimens. Birds, fishes shells, insects and again Australian ethnological objects were forwarded as well as some life-sized aboriginal figures in wax.

Proposals for Improvement

T. C. Cloud of Wallaroo and an Associate of the Royal School of Mines in London was entrusted with the task of selecting and arranging minerals sent by the South Australian Commissioners to the last-named Melbourne Exhibition; consequently he became so well acquainted with the mineralogical collection in the Institute Museum that he was asked by the Board to report upon it and if possible to suggest improvements. Cloud, with Waterhouse, made a comprehensive survey and presented to the Board a painstaking report of about 2,000 words. He considered the general representation of typical minerals to be good but advised acquisition of 90 or so to fill gaps; a year or so later Cloud purchased in London some of the necessary specimens for the Museum. He further commented that the collection of South Australian material was far from representative and that in his private collection alone were twice as many minerals as in the Museum; thanks to the later efforts of Douglas (later Sir Douglas) Mawson from 1906 to the date of publication of this history, the collection is now unrivalled. It is intriguing to note that Cloud advocated the system now practised throughout the whole of the Museum collections, namely, to each specimen as far as is practicable a number is either attached to, or, preferably, written or painted on it corresponding to a number in an appropriate register, where full data are given; in modern systems card catalogues are used in conjunction. Cloud was emphatic that the system then employed of loose labels, which were easily lost, is useless. How very true this is may be seen by reference to our current registers of collections where an old friend O.C. (old collections) is oft repeated in the columns reserved for the name of the donor or collector and the locality.

It is evident that attacks of the "Museum Beetle" *Anthrenus* and other pests were already causing concern in 1876 for the Museum Committee, following an inspection, had decided that the Curator be sup-

plied with an airtight box "in which to chloroform specimens infected with insects".

Reference to old records does indicate that Waterhouse may have been untidy and careless in his methods, particularly during his declining years. That he did not appreciate the necessity of study collections seems probable; it is certain that he did not fully realize the importance of retaining, and maintaining in good order, zoological material which in later years might be difficult to replace, a contingency visualised by members of the Institute Board more than 20 years before. Eventually many specimens were crowded together in the exhibition cases, without adequate labels and without interest to the public, who became vocal in their assesment of the public utility of the Museum; it must be emphasised, however, that for 20 years he had been handicapped in every possible direction—lack of space, of staff and of adequate finances. It must have been discouraging indeed.

In November, 1881, the Museum Committee for the first time made the suggestion that teaching series be arranged, and instructed Waterhouse to prepare "a series of skulls, articulated skeletons and dissections illustrating the most important classes of animals, which shall effect facilities for study of students of zoology and comparative anatomy" .

During his last year of office Waterhouse still displayed enthusiasm concerning useful incoming collections, remarking on the excellence of the recently acquired "College series of casts" of rare fossils from Ward's of Rochester, New York, (a firm with whom we still deal); a considerable increase in the mineralogical collection due to specimens secured from the recent Sydney and Melbourne International Exhibitions was welcomed and of more local interest and value was a good collection of minerals from Burra copper mine, placed at the disposal of the Museum by Sir Henry Ayers. Waterhouse regretted a decrease in the number of zoological specimens coming in but remarks that "space for the exhibition of such specimens has not been available". Waterhouse resigned in February, 1882, because of failing health and was granted eight months long service leave; after a visit to England he returned to South Australia, where he died in 1898, at the age of 84. His grave, still cared for by his relatives, is in the Magill Cemetery.

So, in the first quarter of a century, Waterhouse collector and naturalist, gathered to himself from many parts of South Australia and beyond—from still almost virgin fields insofar as the terrestrial fauna of parts of the State is concerned—a remarkable collection of birds and mammals. The fact that much of the collection was sent abroad and the remainder not properly cared for was most unfortunate for posterity.

Taxidermists and Collectors

As already mentioned taxidermists were employed as field collectors during the curatorship of Waterhouse. One may judge from the old accounts that in the main they were paid by results—so much per specimen. Jacob Gardner, a skilful taxidermist who in the opinion of the Curator had an extensive knowledge of the habits of our birds, provided the Museum with many specimens.

Frederick Schultze collected a great deal of natural history material, including birds and mammals, from about 1865 to the early seventies. Some accounts (1867 and 1868) indicate that he was paid 15/- to 18/- per dozen for skins of small birds, 3/6 for a Whistling Eagle and 2/- to 2/6 for birds of intermediate size; his address at the time is given as Gilbert Junction, Stockport, South Australia.

Through the interest in science of George Woodroffe Goyder, Schultze accompanied the Northern Territory Expedition (or Survey Party of 1868-9) and collected a great number of bird skins, some mammals and much marine and other zoological material. That he was energetic is apparent. As evidence may be quoted the following communication from him to J. Stokes Millner, Acting Government Resident at Port Darwin; the letter was addressed from Fort Point and is dated January 29, 1870; like the lists of materials supplied it is written by a hand other than that of Schultze.

I have the honour to hand herewith particulars of specimens of Natural History and Botany collected by me, since 25th September last. The collection consists of thirty-five Boxes which have been shipped on board the *Gulnare* for transmission to Adelaide.

This is signed "Fredr. Schultze, Naturalist and Botanist". Thirty-five boxes filled in four months is no small effort. Schultze also supplied details of all the contents of these boxes. Every species of bird, whether represented by one or more specimens, had its own package number within the box. A remarkable range of material was shipped on this occasion; 282 bird skins; reptiles, crustaceans and other marine invertebrates; marine algae; dried plants etc. Botanical specimens also included seeds of which he supplied a "Catalogue" giving the numbered packets and for each the number of the plant, if any, in his "Botanical Note Book", which seems not to have been preserved.

Schultze was meticulous in his methods; another of the lists gives details of specimens being forwarded from Darwin to Adelaide "per Barque *Bengal*" and dated July 1, 1870. Listed are the contents of 21 boxes containing birds, reptiles and amphibians, insects of all the main classes, shells and other marine material; apparently during the previous six months Schultze had skinned 350 more birds, representing 90 species.

Many of the creatures are referred to by at least the generic name and in the birds a specific name is often given.

A considerable number of the bird skins secured by Schultze and by Andrews were sent by way of exchange to the other museums in Australia, particularly those in Sydney and Melbourne. Many found their way into the private collection of E. Pierson Ramsay of Sydney.

Frederick William Andrews, field naturalist and bird observer as well as taxidermist, in 1864 commenced his long and valuable Museum association. Donations of specimens were made by him in the sixties and seventies, but in one way or another he was commissioned to collect for the South Australian Museum over a period of 20 years. During this time he collected and sold to the Museum large quantities of birds from widely separated parts of South Australia.

In 1874-5 Andrews was the collector attached to the Lake Eyre Exploration Expedition under J. W. Lewis. He collected north of Lake Eyre, in 1874, six specimens of the Eyrean Grass Wren *(Amytornis goyderi)* of which two are now in the British Museum and one in the Australian Museum, Sydney; the species has not been seen since and is not represented in the South Australian Museum bird collection.

Andrews secured a Night Parrot near Lake Eyre in 1875 and between 1875 and 1880, in the vicinity of Gawler Ranges west of Spencer Gulf in South Australia, he made skins of at least eight other examples. Almost all of this material was utilized for exchange purposes. It went in part to the Australian Museum and the National Museum in Melbourne, while four skins found their way into the private collections of H. L. White in New South Wales and E. Pierson Ramsay, then a member of the staff of the Australian Museum. Ramsay's specimens eventually went to the last-named institution and White's to the Melbourne Museum. Until recently the South Australian Museum possessed only one poor skin and three sterna of the species. About four years ago, however, the then Director of the Australian Museum, with the approval of his Board, was generous enough to donate one of the Gawler Range skins taken by Andrews who, it has been said, "must have been about the last naturalist to see the bird alive," although there is evidence that the bird existed more than 40 years later. In 1923 F. Lawson Whitlock was working in Central Australia as a freelance collector for H. L. White, of New South Wales. At Hermannsburg, 80 miles from Alice Springs, natives were burning off porcupine bush *(Triodia)* in order to flush small game. A single Night Parrot was captured by the natives, cooked and eaten, unfortunately without plucking, so that even the feathers were not available.

G. E. Loyau's statement, in his *Notable South Australians*, 1885, p. 51, to the effect that most of the specimens collected by Andrews could be seen at the South Australian Museum was far from true at the date

of its publication. It would appear that practically all of the very limited space in the old Institute Museum was used for exhibition and few, if any, "duplicates" of furred and feathered animals were retained. In other words, no serious thought had been given yet to the possibility of establishing study collections of terrestrial vertebrates as material for future researchers.

One of the earliest taxidermists said to have prepared specimens, from 1840 onwards, which found their way into the Museum, was George S. Isaacs, born in London and one-time of Gawler, South Australia. He wrote journalistically as "George A. Pendragon" for a theatrical journal *The Critic*, and died on February 14, 1876.

E. Withers, of Wakefield Street, Adelaide, was by all accounts noted for his skill and care in the preparation of bird skins; he is listed as a donor of specimens in the early sixties. Birds were sent to him and to at least one other local taxidermist from time to time to be mounted for exhibition purposes.

The Birth of a Plan

By 1865 Waterhouse had become restive concerning the limited exhibition accommodation at his disposal, reporting that for want of adequate space for the necessary cases there were lying in storage a collection of European shells and about 1,000 named fossils calculated to be of interest to students and readers of geology. He added that with existing facilities it was not possible to arrange the birds systematically and that furthermore these perforce were crowded together in the cases. The Library was similarly handicapped and the Board, thoroughly frustrated, expressed strongly the feelings of its members. Their remarks and their comparisons are worth quoting.

Ten years have now passed away since the South Australian Institute was established by the Legislature of the Province, and it may be thought that at such an epoch it would be the duty of the Board to review in detail the results which have been achieved during that time.

It scarcely appears to them, however, that these results in their more tangible forms, that is to say, in the Library and Museum, are all that might have been desired. Ten years—a very appreciable space of time, and one which rarely passes over an old-established country, with all its settled forms of civilizations, without leaving some very definite landmark behind in the shape of alteration if not of development and improvement —in an infant community like this is as a generation in an old one; and for such a period the Board can scarcely think when they look at their Library and Museum, that enough has been done.

They and their predecessors have spared neither time nor labour, and have done the best they could with the means at their disposal; but those means have been small in comparison with the needful requirements of the Institute, and the objects to be ultimately accomplished.

Perhaps the fact that the sum annually voted for the purposes has been so limited may in some degree be explained by an impression—which is too common, and which can only arise from a totally erroneous apprehension of the purposes for which the Institute was established—that the Institute was meant to be little if anything more than a circulating library on a large scale, the principal object of which would be to furnish the latest novel to its subscribers. Under this misapprehension it would appear that the grants have been regarded rather as benefactions to a small and special portion of the community than as the necessary public support of a National Institution.

To this cause probably is owing the fact that a South Australian cannot without some sense of shame regard the contrast between what has been done here and in the adjoining colony during the last ten or twelve years. During that time the Melbourne Government cannot have spent upon the Public Library and the National Museum a smaller sum than £140,000; while the whole public expenditure on the South Australian Institute, which embraces the objects of both those Institutions, somewhat exceeds one-eighth of that sum. The Board are well aware that the means and population of Victoria far exceed those of South Australia and probably have done so in former years to a greater extent than now, but the difference can be nothing like that indicated above, the present proportion between the population and income of Victoria and South Australia being something like 3½ to 1.

These remarks must, of course, be understood as referring to the past; from the future the Board hope better things, as an earnest of which they have much pleasure in stating that a sum of money appears in the Estimates recently laid before Parliament as the first instalment of a vote for the enlargement of the Institute building.

The amount is not large, but that probably is due to the fact that as yet the exact nature and extent of the proposed additions have not been decided by the Government, although the Board have reported fully upon the subject.

Before the Board have to present their next annual report, they trust that some substantial progress may have been made with this desirable and most necessary work.

For a decade and more, the Board, in their efforts towards expansion of the Institute and its Museum, exhibited a tenacity of purpose which it would be hard to excel. The State was far from wealthy; its resources were by no means fully explored nor were their ultimate potentialities anticipated.

Actually it was in 1863, when the Museum collections and the Library showed unmistakable signs of rapid expansion, that the Institute Board foresaw a necessity for increased accommodation. Members regarded it as a matter which should be considered without delay. Following their first approach to the Government in January, 1865, a sketch plan for the enlargement of the original Institute building was prepared by the Colonial Architect. This was laid before the House of Assembly in 1866, when the sum of £1,000 was voted on the estimates for 1867, as a first instalment of a sum sufficient for the addition. The intention was that

detailed plans and specifications were to be made, and that Parliament then be requested to provide funds on the estimates of Expenditure for 1868.

In South Australia, however, the effects of the 1866 English panic, and in 1867 of the red-rust destruction of wheat crops, were so great that the Government was not in a position to find the considerable sum required for Museum and Library additions.

In 1867 then, the State was undergoing a depression; pastoral and agricultural interests were suffering and the Board dismally accepted the fact that there was no immediate prospect of the much-needed extension of the Institute and its Museum. As an emergency measure wall cases were placed along the sides of the gallery leading to the Museum, giving an additional 120 linear feet of cases and here were installed the now considerable collection of Australian birds. The much less extensive series of Australian mammals was arranged in one of the Museum rooms. This "temporary" arrangement was implemented because it appeared to the Board "that it was better that the public should have some opportunity of seeing the collection which had been gathered together, even at the expense of crowding the gallery, than that specimens so strange and beautiful should lie unseen and useless in the Curator's room." Shortly after this the School of Design, until then occupying the western end of the Museum, was removed to a large room over the Library and this additional space was soon occupied by Waterhouse, who notes that his expenditure on purchase of specimens was restricted for a while because of the necessity of acquiring further exhibition cases.

Gas lighting was now installed in the three rooms of the Museum, so that it was possible to admit the public occasionally during evenings.

The grant of £1,000 made in 1866 towards cost of a new building remained unused because of the inability of the Government to add a further sum on the current estimates.

The Board did not cease its representations for a new building but matters were brought to a head when in 1870 and again in 1871 the annual grant to the Board was reduced from £1,500 to £1,000; the salary of Waterhouse at this period was about £200 per annum. Vexed and anxious regarding the future of the Institution, members decided at first to organise a public meeting but discarded the idea in favour of a petition to the Government. Copies of this, addressed to the Legislative Council and the House of Assembly, were left available at various places in Adelaide and the principal townships in the State. The petition to the Legislative Council was signed by 4,194 persons and that for the House of Assembly by 3,929. This lengthy effort drew attention to the following facts:

That, when in 1858 and 1859 money had been provided by Parliament for erection of the Institute building it was intended to cover cost of only part of a plan; hence, the north side of the building at present available had been left unfinished. The lapsing of the 1866-7 initial vote for enlargement is referred to, and also the overcrowding in all parts of the Institute.

The attendance at the Museum is mentioned—1,000 per week—while on each public holiday "according to the estimates of the policeman on duty," from 200 to 800 persons were visiting the three rooms. Finally they reiterate their opinion "That the formation and maintenance of Public Libraries and Museums is recognised as a duty by all civilized communities, but there is little doubt that South Australia is in this respect far behind most of the neighbouring colonies, even when due allowance is made for differences of wealth and population."

The Hon. A. Stow, M.L.C., was asked to present the petition to the Legislative Council, and Mr. D. Murray, M.P., was asked to present the petition from Adelaide to the House of Assembly, while the petitions from the country were presented by the respective senior members for the different electoral districts.

Subsequently motions were brought forward in both Houses affirming the necessity for an enlargement of the building, and requesting the Government to ascertain its probable cost, with a view to an amount being placed on the Estimates for 1872 to provide for the necessary expenditure. The motions were passed without any serious opposition, and without a division, in both Houses, the Government giving conditional support to them.

Following this, an amount of £3,000 was voted in 1872 as an initial instalment towards the cost of a new wing, to be erected east of the existing Institute and to be connected to it by a temporary corridor. The idea of enlarging the Institute building apparently had been abandoned. (Additions were made much later, and opened in 1907, to provide accommodation for the Royal Society of South Australia, the South Australian Society of Arts and the South Australian Branch of the Royal Geographical Society of Australasia; included was a large lecture room, a basement for storage, while a caretaker's cottage, a little apart from the main structure was erected at the same time).

In 1873 foundations for the west wing of the proposed building were laid and designs to conform to the foundations were called for; the building was to have two floors, the upper one to be occupied by the Museum. Not satisfied with this arrangement, Parliament asked that a Royal Commission be appointed to consider and report upon the Institute and its requirements.

It appears that at this juncture Waterhouse wrote to Dr. Julius Haast, of the Canterbury Museum, New Zealand, concerning the delay

in building a new Museum in Adelaide, for in one of Haast's letters (July 18, 1873), occurs the following passage:

> Not only have I still some spare room, but we are going to build another room to our Museum, having a vote of £5,000 for that purpose besides £5,000 for College and public library buildings, all Institutions connected with the Museum, together with a grant of 300,000 acres of pastoral land—you see this is not bad for a provincial Institution. However, I may say that I expect very large and valuable collections from all parts of the world; many of them on the way and that I have no doubt that the space to be allotted to me will not be at all too great.
>
> Why do you not work the members of your Assembly as I have done ours, you ought to be able in your rich colony to spare a good sum towards erecting a Museum worthy of it.

This passage is marked in pencil, presumably by Waterhouse, who had formed the opinion that the close association of the South Australian Museum with the Public Library should be severed, and the words "all Institutions connected with the Museum" are scored out, also in pencil. A little later the same year, acknowledging a communication from Waterhouse, Haast pens a comment designed to be helpful:

> There is a wonderful power of persuasion in having M.P.'s on your own ground and putting their august noses upon your specimens in the Museum. I have made many . . . a member who was dead against the museum a very strong supporter. Acty, going to some trouble opening cases after cases with specimens, showing them about and enticing their sympathies. Do likewise and the future of your Institution will be secured.

One wonders what the reaction of Waterhouse was to this advice as during the whole of his curatorship members of both Houses in Adelaide *were* interested in the Museum — financial difficulties constituted the handicap.

One can imagine too, Waterhouse confronting his Board with details of the approved New Zealand buildings, with the aforementioned passage deleted.

The Royal Commission was formed in 1873, took their Minutes of Evidence from January to March, 1874, and reported in April of the same year.

The Chief Justice of the day, Sir Richard Davies Hanson, was Chairman, the other members being two members of the Legislative Council, William Everard (who had been a member of the Institute Board for seven years) and William (later Sir William) Milne, Rowland Rees (an architect) and Dr. William Gosse.

Those called as witnesses were Waterhouse and a dozen prominent citizens, including such well-known figures as Charles Todd, C.M.G., who was founder of the Observatory at Adelaide, and had been a member of

the Institute Board for eight years; John Howard Angas, M.P., a son of George Fife Angas, and at the time the member for Barossa; and Dr. Richard Schomburgk, then Director of the Adelaide Botanic Gardens. Three members of the Philosophical Society were examined; these were John Howard Clark, Thomas Drury Smeaton, and the Hon. Lavington Glyde. Clark and Glyde had served on the Institute Board for 15 and 11 years respectively.

It is interesting to note from the minutes that even early in the history of the Institute there was a divergence of opinion regarding the desirability of associating a Public Library and a Museum. Clark, the first witness called before the Commission, submitted a number of reasons why the Library and Museum should be governed under one Board. Rowland Rees, on the other hand pointed out that museums often have their own specialist libraries and that overseas museums which he named had for long been provided with their own buildings. Clark finally agreed with the Chairman that apart from "abstract desirability of having institutions of this sort combined or separated it was expedient to economize expenses by having one institute for all the various branches."

Sir Richard Hanson referred to the comparative poverty of the State, the obvious factor which, as in the past, retarded the development of the Institution at this period. Some other witnesses concurred more or less with this view. On the contrary, T. D. Smeaton, a member of the Philosophical Society who had collected specimens for the Museum in the south-east of the colony, considered it desirable to separate the Museum and Library in different buildings and under different management; he also submitted his opinion that the Museum would be better accommodated on the ground floor, in long rooms of no great height, but continuous in length. Schomburgk stressed the desirability of a separate building for the Museum as, naturally, did Waterhouse, who produced a plan prepared by himself of a building to cover an area of about 119 feet by 54 feet exclusive of a Curator's residence to be attached. The latter was considered by Waterhouse to be a most necessary adjunct and in support of his contention he maintained that provision of such private residence as part of a Museum plan was customary. He cited for example the fact that his brother, G. R. Waterhouse, was provided with living quarters both at the museum of the Zoological Society of London, during his term with that body, and later at the British Museum.

The Museum proposed by Waterhouse was to cost about £5,000, whereas it had been suggested that £6,000 be spent on the entire first extension. It would seem that Waterhouse had one main view in his mind when planning his building—the display, systematically arranged, of all the material available to him, as he stated in evidence that "I cannot exhibit half the specimens I have." In support of his proposal

he furnished data of interest in indicating the extent of the collections at that time. These, in short, showed that to exhibit all collections in hand the linear feet of wall cases would have to increase from 174 to 800 feet and the number of table cases from 32 to 192.

J. H. Angas also declared that it was desirable to separate the Museum, that combination of museums with other institutions was the exception rather than the rule, and that a site near the Botanic Gardens would be acceptable. Rowland Rees, in the course of his questioning of Angas, asked whether lengthy articles and letters which had appeared in the *South Australian Advertiser* five to seven years before had influenced Angas' views regarding autonomy for the Museum, but this Angas denied.

The letters referred to appeared under the *nom-de-plume* "Pataecus Fronto." This pen name is suggestive. When Captain George Grey was Governor of South Australia, amongst the many specimens sent by him to the British Museum, was a single example of a curious small fish representing a previously undescribed genus and species for which, in 1844, Dr. Richardson proposed the name *Pataecus fronto.* Waterhouse himself was interested in our fishes and it is probable that few, if any other Adelaideans had ever heard the name of the fish — rare and economically unimportant.

Robert Kay, who had then been Secretary to the Institute for 14½ years, seemed to be somewhat concerned that the Museum was monopolizing so much of the available space. He referred to the fact that the Museum had long since overflowed the three rooms originally intended for it at the rear of the Institute, saying that "we have been compelled to put things in the gallery, and in fact wherever we could find room for them" . . . the gallery "ought not to have been used for the Museum." He claimed that unless funds were substantially increased no benefit would result from separation of the Museum from the Library. The management of the Victorian Library, National Museum, Technological Museum, and National Gallery by one board of trustees divided into committees he considered satisfactory (*) but contended that this system was essentially different from that laid down in the South Australian Institute Act.

Waterhouse had insisted that a museum requires to be one large continuous room "and it is highly necessary that it should be on the ground floor," Kay stressed his opinion that it should be on the upper floor of the proposed west wing because of better lighting and drier conditions.

The Architect to the Government, G. T. Light, on being called was questioned regarding the instruction issued to architects for competitive designs for the complete additions, and he estimated these would total

(*) Eventually proved undesirable: see Pescott, *Collections of a Century*, 1954, p. 152.

£85,000—a "rough estimate" allowing for increased costs resulting from the eight-hour day innovation for labour.

A plan of the site of the proposed Institute and Museum was prepared by the Public Works Officer (September, 1873) in order to show the arrangement of the west wing, or library, and the various other rooms and halls as then proposed. Broadly, the plan envisaged an east and a west wing flanking a central building.

With this plan in view architects were invited to submit one or more designs under "revised general conditions." A premium of £200 was to be paid for the approved best architectural design, £100 for the second best; the Government was to have the right to purchase any other designs which they might fancy for the sum of £50. The need for careful husbanding of resources was present always in the minds of our early administrators and it is noted that economy as well as architectural merit was to be considered. It was recommended that the plinth course should be faced with granite, any quantity of which could be procured within "two day's sail of Port Adelaide." Again, however, a cautious note is added. "It is not desired that the dressings should be of too ornamental a character, but both economy and effect must be studied." An approximate estimate of cost was to be enclosed with each design.

In its report of April 21, 1874, the Commission recommended that the South Australian Institute be superseded by a Public Library and Museum, to be entirely supported by the Government. The proposal to erect a new wing east of the Institute was generally approved, but it was recommended that both west and east wings be commenced at once, the former to be used by the Public Library, the eastern building to be reserved entirely for the Museum.

An amount of £5,000 was eventually placed on the Government estimates for 1875-6, for erection of the west wing.

Members of the Institute Board were fretting at this delay and were not completely satisfied with the findings of the Commission. Assembled in September 1875 they drew up a letter to the Hon. Ebenezer Ward, then Minister of Agriculture and Education. They did not agree with the Commission that incorporated bodies no longer should be authorized to elect representatives of the Board. They said said so emphatically and desired that some freedom of action be retained rather than that the whole Board be appointed by the Government. Canny folk, and with past experience in mind, they pointed out that in framing a new Act for the proposed Government Museum and Public Library, provision should be made for a minimum annual grant for maintenance and general expenses, quite distinct from money allotted from time to time for building. Regret was expressed that the building vote abovementioned was so worded as to allow the alternative of enlarging the existing building. The

Architect's drawing of the buildings proposed for Museum, Library and Art Gallery of South Australia, 1878

suggestion was made that this item be referred back with the alternative deleted "when Parliament could be informed that the Government intends to proceed with the new building at once," relying on the required further expenditure being voted from time to time. Plans and designs had been accepted in 1874 and paid for by the Government; the Board agreed that these were satisfactory and that with some modification of the internal arrangements they could be adopted. Not hoping to attain the impossible they remark that they "have no wish to be unreasonable in their requests", and therefore would be content "for the present" with the west wing, the erection of which, according to the Colonial Architect, would be covered by the grant of £5,000. The hopeless overcrowding of both Museum and Library was again stressed but a fresh argument was brought to bear. The University of Adelaide was established by Act of Parliament in 1874 and for a time functioned in the South Australian Institute. The Board now pointed out "that if the building now asked for be erected they will then be able to provide increased accommodation for the University, which is now dependent upon them for room in which to carry on its operations".

No further action was taken until 1876, when the Colonial Architect was instructed to prepare fresh plans, the sum of £5,000 was voted by Parliament and a contract for the laying of the foundations of the west wing was accepted, as the foundations laid in 1873 were unsuitable for the new plan and were taken up.

By the middle of 1877 drawings and specifications were completed and tenders were called for without satisfactory result; a modified set of working drawings and specifications were prepared in 1878.

Criticism

An individual who was to maintain an active interest in the Museum and its affairs for many years arrived in South Australia soon after the founding of the University of Adelaide. This was Professor Ralph Tate, and his name soon appeared in the lists of donors to the Museum. Tate came of a celebrated family and for 40 years was a recognised authority on geology, mineralogy, conchology, and botany, and was a prolific contributor to scientific journals in Australia, America and Europe. In 1864 he was fellow and lecturer of the Geological Society of London, and was curator of the Society's Museum. He was appointed to the Elder chair of science at the University of Adelaide in 1875.

The University Council had arranged for a series of lectures to be delivered in the South Australian Institute and in 1876-7 Tate gave a course of 12 lectures. He became a member of the Philosophical Society of Adelaide in 1876, was elected Vice-president next year, and President in 1878, when he prepared and presented a thoughtful "Anniversary

Address" in which he recapitulated and constructively criticised the efforts made in South Australia for the furtherance of knowledge in the natural sciences. He summed up in a masterly manner the status of the Museum after its 20 years of existence. He stressed the obvious need for study collections—"we have not only to consider the wants of the gazing public, but also to provide for the requirements of the special student and to afford materials for the *savant* in promoting original research which functions ought not to be sacrificed for the benefit of mere sightseers." The contention that the Library and Museum should be regarded as separate institutions, a view which had been advocated in the press for some years, was strongly supported by Tate, who considered their interests "somewhat antagonistic," but 60 years were to pass before this was considered seriously enough for positive action. Tate made a prophetic utterance regarding the plans in hand for the new Institute building:

> The present Museum accommodation is lamentably deficient, and yet a great mistake is about to be made with that to be contained in the new Institute building, as space will be only large enough to hold the already exhibited specimens, no provision being made for the display of objects stored away, and of those not already collected. It moreover presents the sad fault of an upper gallery. It would also be well to profit by the example of the United States, who fully recognise the fact that the expense of a grand building starves the museum within.

The Plan Proceeds

There was now a further delay, fortunately of short duration, owing to the fact that the new Institute site, on which the hopes of all interested were centred, was included amongst the areas on which it was proposed to erect new Parliament Houses. The Government, however, decided to adhere to its intention and for the third time tenders were called for, in the *Gazette* of December 5, 1878, and in Melbourne soon afterwards. The tender of Messrs. Brown and Thompson of Adelaide for £36,395 was accepted, this being the lowest; the total expenditure eventually incurred in construction of the wing was almost £41,000.

The Governor, Sir William F. Drummond Jervois, consented to lay the foundation stone on June 20, 1879. The approach to His Excellency proved over-optimistic for it was found that the foundations laid down late in 1876 were in turn not satisfactory! It was necessary to remove them, to deepen the trenches, and to construct a drain in order to keep the new foundations permanently dry; the site, on North Terrace, is on the upper terrace of the River Torrens.

In 1882 the Museum was moved out of its old and impossibly inadequate quarters to the as yet unopened new west wing. So ended its period of travail in three small rooms.

Although the Institute was progressing insofar as extension of accommodation was concerned, the adoption of this static plan in the seventies, to be implemented over a long period, was unfortunate in the extreme. The unsuitability of the west wing for efficient functioning of either Public Library or Museum became obvious, but inevitably the disadvantages were repeated 30 years later, when the east wing was built.

A further amendment of the Institute Act destined to have a great influence on the future of the Museum was passed in 1879; this gave authority to the University of Adelaide to appoint two Governors to the Board, so that once more the number was raised, there now being provision for nine members. The Board thus comprised three Government nominees, two elected from library subscribers, one each from the South Australian Society of Arts and the Philosophical Society, and two from the University. This policy of University representation by right of Parliament continued for 60 years.

The Chief Justice, Samuel James Way (then Vice-Chancellor of the University of Adelaide) and the Rev. John Crawford Woods, B.A., were elected by the University in May, 1880, the delay being due to necessary alterations in the University statutes to authorise such election. Woods declined nomination after holding office for about 18 months and in his place the University towards the end of 1881 sent Dr. Edward Charles Stirling, a forceful personality who for 38 years was to play an important part in the progress of the Museum, helping it through one of its more difficult periods, recording noteworthy discoveries and by his enthusiastic efforts vastly increasing the collections.

In 1881, when the new building was being built and it was anticipated that there would be added space for the Museum collections, the Board decided to augment the staff by appointing an Assistant Curator and Taxidermist. Accordingly a letter was sent to Professor William Henry Flower, then Curator of the Royal College of Surgeons in London, asking him, in consultation with our Agent General, to select a suitable officer to fill the position. Acting on the advice of Flower, George Beazley was considered to fill the bill; he was appointed, arrived in Adelaide towards the end of August, 1881, and was given a temporary work room in the basement or "crypt" of the new building. A sum of £50 was allotted for tools and other equipment necessary for operations in taxidermy, the first large purchase made for this purpose.

Shortly after his appointment Beazley was sent to Point Bolingbroke, near Port Lincoln, to recover the skeleton of a stranded sperm whale. Members of the Board were so much gratified with the energy and ability "with which he executed this arduous and dangerous task, that they voted him a special gratuity as a proof of their satisfaction." This was an auspicious beginning for Beazley, but later he was to cause the Board much concern before he left the Museum.

The sum of £75 was paid to the finders of this sperm whale in repayment of their expenses and for the purchase of the skeleton, which is still exhibited.

During the absence of Waterhouse on long service leave following his retirement, Dr. Wilhelm Haacke, formerly assistant to Professor Haeckel of Jena and afterwards on the staff of two New Zealand Museums, became Acting Curator.

The accompanying photograph of Haacke, for which I am indebted to the Alexander Turnbull Library, Wellington, New Zealand, according to its inscription, was given to Mrs. von Haast on the occasion of her birthday, January 21, 1882.

Haacke, an able and energetic individual, arrived in Adelaide and took up his duties on March 22, 1882. He found part of the Museum collections already removed to the then nearly completed west wing. He at once moved the remainder of the material to the crypt and two small rooms of the new building.

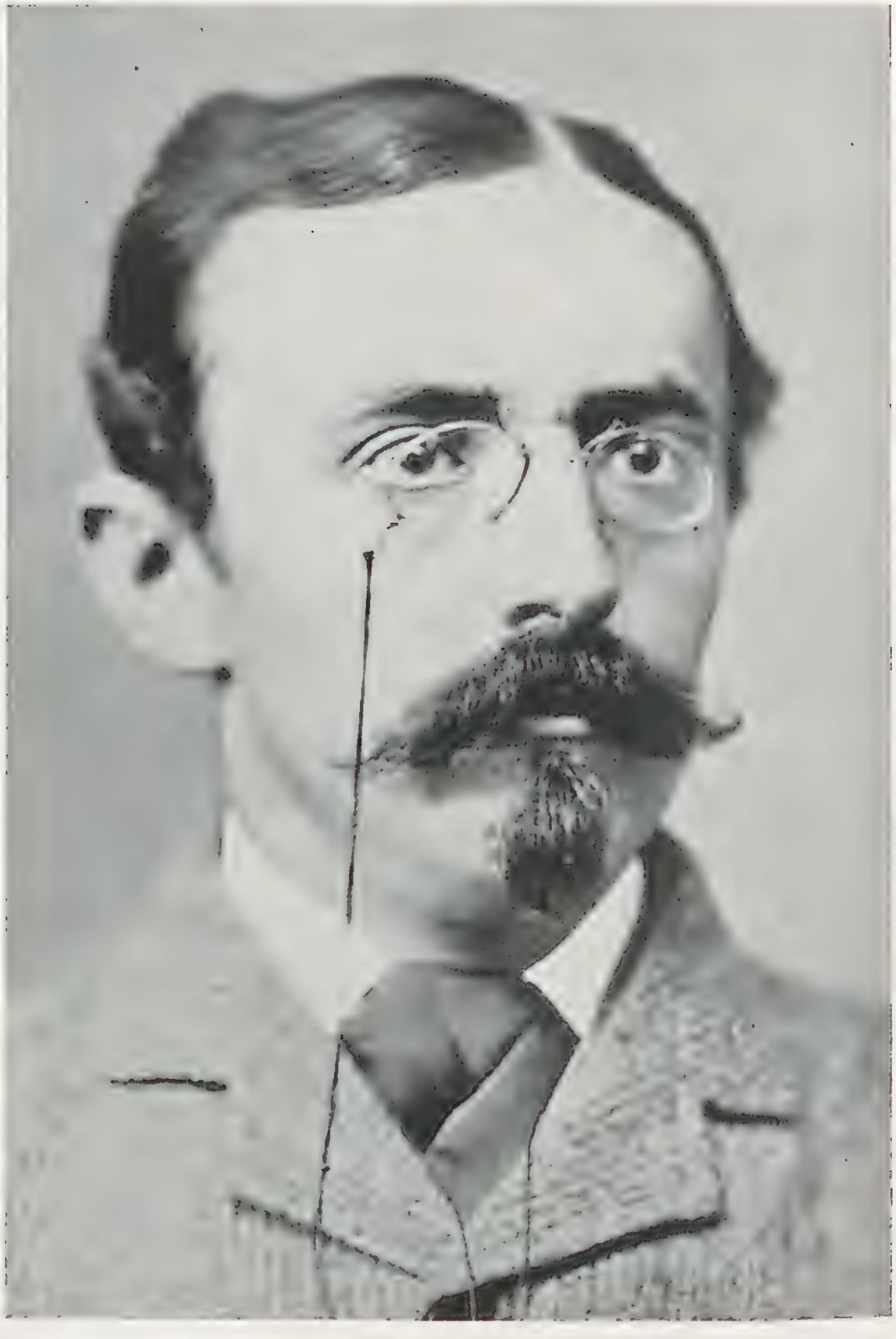
Harry P. Gill, one of the masters of the National Art Schools, South Kensington, had been appointed master of the School of Design and arrived in South Australia in September of the same year. The old Institute Museum was then appropriated for the use of his School.

After examining the collections, Haacke in his first report to the Board took the opportunity of expressing at great length the views he entertained "of what the South Australian Museum ought to be." Some of his comments are of interest today. He wrote:

In the first instance there should be in South Australia no institution rivalling the Museum under my care, as this would not tend to further the scientific and educational interests of the colony. In Adelaide we enjoy the existence of a Botanic Garden, with a Museum of Economic Botany, and of a University with a museum for lecture purposes; a Zoological Garden is now to be established, and we shall have a Technological Museum in the course of time. There are also small museums connected with some of the country institutes, and the Royal Society is endeavouring to promote the intellectual and scientific advancement of the colony. In the interest, not only of the Museum, but of all the above institutions, I respectfully beg you to take the following suggestions in the spirit in which they are made.

I think it would be wise to exclude any technological and botanical collections from the present Museum where, however, all objects of zoology, ethnology, mineralogy, and geology should be gathered, as long as it is not thought advisable to have special museums for each of these branches of science.

In the Zoological Gardens to be established, only living animals should be kept, and the museum in connection with the University should only contain such collections as will be useful in lectures. Again, the country museums should be satisfied in having only good educational collections, while all objects of scientific value should go to the central institution, which, in connection with the Botanic Gardens, the University, and the Royal Society, ought to represent science in South Australia.



WILHELM HAACKE

Curator, 1882. Director, 1883-1884

2

The West and North Wings 1882 - 1895

Haacke and Staff

Dr. Wilhelm Haacke, Acting Curator of the Museum during the absence of Waterhouse on his retiring leave, accepted the position of Museum Curator on November 3rd, 1882 and was appointed Director on February 2nd, 1883. This change of title was effected by the Board, doubtless prompted by Haacke, because it considered that the "Title of Curator is likely to be misunderstood in the Continental Museums, with which Dr. Haacke will have much correspondence".

At the same time the Museum Committee recommended that the title of the Museum be changed from "The South Australian Institute Museum" to "The South Australian Museum".

Haacke wished for a building set aside entirely for the Museum; instead, the Art Gallery was now placed in the front halls of the new wing, while the Museum occupied the northern half of the galleries for exhibition and the other purposes, and the northern part of the slate-floored crypt for storage and work rooms. Thus the Public Library was sandwiched between the Art exhibits and the Museum, each occupying approximately one-third of the total space available.

The necessity for separate quarters for preparation and preservation of zoological specimens soon became apparent. Obviously, for example, the odorous task of maceration of skeletal material could not be carried out within the walls of an occupied public building.

In 1859 no coal gas was available in Adelaide for illumination and, as noted earlier, a plant for producing gas (from coal and later "Rozin" a patent oil) was installed to light the small South Australian Institute at night. A retort house, situated at the rear of the Institute, was completed and in working order early in 1861, when it will be recalled the Institute was opened. It was never entirely satisfactory but was used

until November, 1863, when the South Australian Gas Company was formed. Following this, for a time the retort house was used for various purposes, but principally as a chemical laboratory. In February, 1882, it was handed over to the Museum for use as a macerating house, and to this day, with its chimney converted as an incinerator, the old "Gas House" continues to be used for maceration and other preparatorial work.

Because of delay in completion of the new building and its fittings the Museum was not opened to the public for three years but Haacke notes that he was glad of the opportunity to examine thoroughly the collections in hand; also he proposed to obtain and mount further specimens for exhibition, including articulated skeletons.

Haacke destroyed all the zoological specimens which had suffered long years of exhibition in the old Institute. He informed the Board that, as the number of these was large, provision must be made for a speedy supply of fresh specimens. Accordingly, F. W. Andrews, from whom Australian natural history material had been purchased for so many years, was now employed as a collector, and also to examine the condition of specimens in the Museum. The following year, 1883, he was "permanently appointed collector for our Museum exclusively". Furthermore, it was decided that a staff of scientific and technical officers was essential if the Museum were to progress and properly carry out its functions. The appointment of George Beazley has been referred to already. Johann Gottlieb Otto Tepper, a Fellow of the Linnean Society of London, joined the staff in 1883, first in the capacity of "collector," at a salary of £150 per annum. His work was to be especially concerned with the entomological section. Soon he became Entomologist and collector, and then for many years was in charge of the entomological section, the coin collection and the Museum library; in 1890 he was titled "Museum Entomologist".

Tepper submitted a number of entomological papers to the Philosophical Society of Adelaide and many more after it became the Royal Society of South Australia. His efforts covered also botany, including lichens and fungi and some really remarkable subjects for an entomologist; for example "On Whirlwinds," "Red Rust" and "Bay of Biscay soil of South Australia and its formation".

For several years Tepper assisted in many directions within the Museum, including assistance with labelling. It would appear from the minutes that the first type-writer owned by the Museum was purchased in 1885. This, a "Hall," was to be used primarily for gallery work and it was decided that Tepper was "to learn to use the machine and print labels as required".

Amandus Heinrich Christian Zietz, as a result of a recommendation by Haacke, was engaged as a preparator in 1884, the intention then being that he would be employed chiefly in preparing Mollusca and other

AMANDUS HEINRICH CHRISTIAN ZIETZ
Assistant Director, 1888-1909

JOHANN GOTTLIEB TEPPER
Entomologist, 1886-1911

invertebrates for exhibition, as well as caring for all specimens preserved in alcohol. In 1888 he was appointed Assistant Director, under Stirling, then Honorary Director.

Zietz was born in Schleswig-Holstein, Denmark, and prior to his South Australian appointment was a member of the staff at the Zoological Institute Museum at Kiel, first as a preparator and then as Curator. His main interests lay with birds and fishes; later he was to become a foundation member of the Royal Australian Ornithologists' Union and a Fellow of the Royal Society of South Australia.

A. Zietz was right-hand man to Stirling for 25 years, carrying out most of the actual work of preservation of all other than taxidermy material, the restoration of fragile skeletons, and preparation of a great number of zoological specimens for exhibition; entailed often was the tedious business of identifying material passing through his hands with aid of the limited literature then available. Much of the research conducted at the Museum during his long years of service would have been impossible without the efforts of a professional officer of the calibre of Zietz.

Acting on a suggestion from Haacke, Zietz had brought to Australia a considerable collection of fishes and other marine specimens from the Baltic and for these he was paid £50 by the Museum. Amongst other activities he extended the collection of coloured plaster casts of South Australian fishes in place of the less attractive spirit material. F. Santi, an expert artisan, was employed at times to make plaster casts of fishes and other objects but as he could not colour these accurately, A. Saupe was also engaged to assist.

Zietz carried out much marine collecting, mainly in the littoral areas, working in the two South Australian Gulfs as well as on adjacent islands and reefs. Commander Walcot of H.M.C.S. *Protector* was of great assistance at this stage. Becoming interested in the Museum he supplied it with some large sharks, while Zietz was enabled to travel on the ship in order to secure marine material; by 1887 he was in a position to state that at least 200 species of fish occurred in our coastal waters. In his later years he commenced a catalogue of the fishes in the collection but this was never completed.

C. G. A. (Otto) Rau began his 45 years of service in the Museum in 1883. He at once assisted Beazley in collecting and preparing skins and skeletal material of marsupials. Under Beazley's tuition he became a skilled preparator and in 1894 was appointed Taxidermist and Articulator.

Otho Nicolai Noake, who came on the staff as labourer in 1882 and was made a permanent officer in 1883, later became head attendant and did not retire until 1930, when he was 80 years of age. During the west-

wing period he acted as general assistant, particularly in the taxidermy section, and for a while helped Zietz and Tepper in the task of labelling exhibits.

Haacke's lengthy reports to the Board give an impression of really amazing activity. Before the end of 1883 the collections, particularly those of the mineralogical and geological sections, had been enlarged by purchase of specimens at home and abroad. By exchange, collections had been received from the Museums in Sydney, Dunedin, Christchurch and Brisbane. A collection of foreign bird skins was bought from George Beazley, skeletons had been prepared for exhibition and many others were in the course of preparation. A fine Polar bear and the skeletons of a camel and of several ostriches had been presented. F. W. Andrews, Haacke reports, had already obtained a large collection of South Australian birds. Fishes, reptiles, insects, as well as crustaceans and other marine invertebrates, had been collected by Haacke himself or had been donated From the Australian Museum, and from a number of interested South Australians, ethnological collections had been received, the additions coming from Western Australia, Central Australia, the Northern Territory and New Guinea.

Soon after the west wing was occupied, Stirling reported to the Museum Committee that the crypt of the new building was damp and that as a consequence not only had some specimens suffered but Beazley was unwell, chiefly in consequence of working in the crypt in its damp state. While thus absent on sick leave Beazley collected 46 zoological specimens which he shortly afterwards offered for sale to the Museum Committee! Also purchased from Beazley were specimens which he had mounted in his own time and a collection which he had acquired from F. W. Andrews prior to the appointment of the last-named.

It would seem that Beazley always had an eye for profit. At his request he was given permission by the Museum Committee to use his workroom at the Museum and the tools therein for the mounting of specimens for private disposal; this of course to be in his own time. Some transactions which appear a little strange took place between him and the Committee. For example, the skin of a Bird of Paradise was offered to the Museum but for some reason or other was not accepted; Beazley, finding it a remarkably fine specimen, bought it himself and after mounting it submitted it to the Committee for purchase—which was approved. As a protege of the eminent Professor Flower, apparently he was given a great deal of latitude.

Haacke had no small conceit of the superiority of some of his practices. He stated that he had found it necessary to improve the methods of preserving and mounting museum specimens—"I have tried, I hope successfully, to rival the best public Museums in Europe in this

respect. By an invention not yet published, I have greatly improved the art of mounting specimens preserved in spirits, so that these objects, which in other Museums are lost in their bottles, will in our institution form an attractive feature." His method was simple—the fastening of specimens by adhesive or thread to glass slips of various colours and cut to fit into the exhibition jars. Again, he states that the loss by evaporation of the alcohol used as a preservative had been "much minimised by an apparatus invented by myself".

Haacke proposed innovations in the South Australian Museum which are commonplace today. As Ralph Tate had suggested five years before, he wished to inaugurate study collections of Australian zoological and other material, purely for research purposes, and arranged in the recognised classificatory systems, so that they would be readily available for scientific investigation. He desired that a Museum library of greater scope be built up by subscription to research journals, purchase of up-to-date monographs, and other literature. Very pertinently he drew attention to the lack of literature which would enable specialists to identify specimens, stating that as this was not available the only alternative was to send unnamed material, or duplicates of it, to competent researchers elsewhere. This last course Haacke was pursuing almost as soon as he came to South Australia.

In order to stimulate collecting, Haacke, in conjunction with E. C. Stirling and Beazley, prepared directions for collecting and preserving objects of natural history.

Some of the instructions are amusing. For instance:

Collect wherever there is any possibility of doing so. Collect everything you come across, however common, provided it is uninjured.

If no methylated spirit or spirit of wine is at hand, brandy or whisky will serve the purpose, but whatever fluid is employed it should be strong enough to ignite at once when a light is applied.

In 1880 a pamphlet was issued by the Adelaide Philosophical Society, edited by the President and Honorary Treasurer, entitled *A Scheme for the Organisation and Direction of the efforts of Amateur Collectors.* This was prefaced by the following statement:

1. The Adelaide Philosophical Society, being desirous of encouraging the study of Natural History, is prepared to direct the efforts of amateur collectors, and to receive from them observations and specimens—undertaking to record original observations, and when practicable to identify specimens. Those willing to engage in a systematic correspondence are requested to communicate with the *Hon. Secretary, Adelaide.*

2. Persons co-operating with the Society in recording Natural History phenomena in this province be entitled "Local Correspondents".

3. A list of local correspondents be appended to the "List of Members of the Society," published in its Transactions.

4. Approved communications from local correspondents and members, and records of new facts, not being of the nature of a formal paper, be published in the Transactions of the Society under the title of "Miscellaneous Contributions to the Natural History of South Australia," and that a reprint of the same be transmitted to each local correspondent.

Note:—Eminent Australian naturalists have consented to act as referees in their respective departments.

Later in the same year when the Philosophical Society had become "Royal" the "Scheme" was published in their *Transactions and Proceedings and Report.*

Within a year of Haacke's term as Director, 500 copies of the Museum's "Directions" had been distributed and a second edition was anticipated.

Haacke laid out a plan of exhibits for the new Museum in methodical order. His ideas and ideals were sound and an influence such as his was wanted badly at the time. Actually, notwithstanding his bursting activity, his spate of suggestions was not implemented to any great extent.

Unfortunately, considerable collections were sent abroad by Haacke. For example, he forwarded 1,000 zoological specimens to A. Schneider's establishment in Basle, having been promised in exchange, among other things, preparations of the Zoological Station in Naples, and African and South American fishes "unrepresented even in the British Museum". As in the case of his predecessor, Haacke considered that exchanges must be conducted with vim and vigour, remarking that it "is chiefly by exchanging with other Museums that our Museum can hope to acquire a good reputation; most of our money, therefore, should be spent in making collections in our colony".

It is also to be regretted that when the collections were moved to the west wing Haacke so hurriedly destroyed much of the Australian zoological material previously exhibited. One can only hazard a guess as to what was the ultimate fate of all the collections acquired by Waterhouse's exchanges. Certainly much of it must have deteriorated during his declining years for lack of staff and suitable accommodation. Equally certainly, as evidenced by his lists, Waterhouse sent at least some exotic specimens away as exchanges. The less perishable collections were in good order; only the birds and mammals, which do require constant supervision and attention had suffered lamentably.

Credit undoubtedly is due to Haacke for establishing the nucleus of some really good representative extra-Australian material. His efforts are obvious in the overseas collections acquired during his Directorship.

It was Haacke who first suggested "that a scientific journal be published under the auspices of the Museum—to contain notices of new

species of the Australian fauna, anatomical monographs thereof" etc. This proposal was not made again until 1917, then with successful results.

Haacke became a Fellow of the Royal Society of South Australia, and was elected to Council in 1882. He exhibited natural history specimens at the meetings, including material which demonstrated ovoviparity in the Spiny Anteater or Echidna *(Tachyglossus aculeatus*—formerly *Echidna hystrix).* On September 2, 1884, he proudly showed "an ovum found in the pouch of a female echidna, proving that the echidna, although a milk-giving animal, lays eggs which are hatched in the pouch." At the annual meeting which took place the following month:

W. Haacke, Ph.D., exhibited two photographs and dissections of a female *Echidna hystrix,* in the pouch of which he had found the ovum shown at the last meeting. There was only one large pouch, not two small semicircular fossae, as seen by Professor Owen. The large pouch evidently acted as an incubator for the ovum, and probably disappeared after the hatching of the young, only two small semilunar fossae being left. He pointed out also that his specimen showed small tufts of hair on the mammary aveola [sic] now discovered by him in several male echidnae, which on being dissected were found to possess unmistakable rudimentary milk glands, thus showing that the generally adopted belief that such glands were missing in the male monotremata was discredited by facts.

It was on August 25, 1884, with O. Rau standing by, that Haacke, in dissecting a female Echidna, had discovered a broken egg in the pouch. Unfortunately for him, only the day before, W. H. Caldwell, of Cambridge, then working in Queensland, had dissected a female which had laid one egg, and had another ready to be laid.

There seems to have been little time in Haacke's busy life for field work. He does mention a visit of a month's duration in 1883 to Port Vincent, on the western shore of St. Vincent Gulf, where, assisted by F. W. Andrews and O. Rau, he secured some 3,000 specimens, chiefly of marine animals, which he considered to comprise about 230 different species.

Next year Andrews was to meet a tragic end. As earlier mentioned, he commenced work for the Museum as bird collector and naturalist in 1864; his record in his chosen field is outstanding. He was born in England about 1824 and before his association with the South Australian Museum had behind him 30 years' experience in collecting. J. B. Cleland epitomizes his work in the following words:

In 1864 he described birds from the interior. In 1865, he was on the River Murray, its anabranch, the Darling, Goolwa and Milang; in 1866, at Point McLeay; in 1867 and 1868 at "Mingbool," Mount Gambier; in the latter year at Tarpeena near Mt. Gambier also, and at the Glenelg River; in 1871 at Lake Gairdner, Yardea, and the Gawler Ranges; in 1874 and 1875 with Lewis's Lake Eyre Expedition; in 1878 at Port

Augusta; in 1880 at the Gawler Ranges, and from April 9 to November with Samuel White in the Aru Islands; in 1881, at Nonning and Mount Compass; in 1883, west of Port Augusta, at Coralbignie, Nonning, Thurlga, Moonaree, and perhaps at Overland Corner; and again at Mount Compass in October, 1884, where he was drowned. In 1877, from March 3 to June 16, he contributed articles on birds to "The Chronicle". On February 6, 1883, he contributed "Notes on the Night Parrot *(Geopsittacus occidentalis)*" to the Royal Society of South Australia. He had shot specimens at Cooper's Creek in 1875 and in the Gawler Ranges. In a note added by Professor R. Tate, it is stated that Baron von Mueller, towards the end of 1867, transmitted a living specimen of the Night Parrot, described as inhabiting the Gawler Ranges in South Australia, to the Zoological Society's Garden in London.

When Andrews was collecting naturalist attached to the Lake Eyre Expedition of Lewis he prepared *Notes on the Aborigines met with on the trip of the Exploring Party to Lake Eyre, in command of Mr. J. W. Lewis*; this was published in G. Taplin's *The Folk-Lore, Manners, Customs and Languages of the South Australian Aborigines* in 1879.

In the annual report of the Museum Board following Andrews' death, Stirling recorded his appreciation:

> This seems a fitting place for the mention of a loss which the Museum and Australian Zoology in general has sustained during the last year, by the death of Mr. F. W. Andrews, who was accidentally drowned in a waterhole near Mount Jagged, on October 19, 1884, while on a collecting expedition. Mr. Andrews had been collecting in Australia for upwards of a quarter of a century, and had a large and extensive acquaintance, from actual observation, with the Australian fauna — especially the birds. It is probable that he has left very few, if any, to equal him in this respect. He had long been connected with the South Australian Museum, in different capacities, but of late years his health had been failing, and it was not probable that he could have much longer borne the fatigue and exposure which a collector must necessarily undergo.

Early in 1884 the exhibition areas allotted for the Museum were already filled. It was suggested by Haacke that the coins, a collection of which had been accumulating for years, should be handed over to the library or to the technological museum, should this be established, as there was no space in which to show them; they continued to be cared for and added to under Tepper's charge until they became part of the Art Gallery collections about 25 years later. Haacke wrongly considered Australian ethnologia to be well represented. Only a few skeletons of Australian aboriginals had been preserved. Ethnological material from Fiji and the south-east of New Guinea was in hand, but very little other Pacific Islands material. By this time Haacke had learnt, and commented on, the fact that "the number of representatives of most of the species of our native animals and plants, as well as of the aboriginals of Australia, is rapidly diminishing from year to year".

A grave difference of opinion now arose between Beazley and the testy Haacke, who charged him with insubordination and brought other matters against him. Apparently, not fully appreciating a "General Order" of the Board issued in 1882, and instructing that no Museum officers should become dealers in natural history material, Beazley it seems did supply zoological things to various persons, and also mounted and preserved specimens during Museum hours for the same purpose. Amongst other quaint activities he was said to have "bred gentles (*) in the macerating house and regularly supplied Mr. Jos. Allen, of Rundle Street, a dealer in fishing tackle, with them." He sent, privately according to Haacke, fishes to the Australian Museum—the list of delinquencies in fact was an extremely long one. In a letter to the Board advising that Beazley's services be dispensed with, Haacke made a curious statement. "In explanation, I beg to state that I do not for one moment hesitate to confess that I have a strong personal aversion against Mr. Beazley." A great deal of fuss and correspondence ensued; Beazley denied some charges and explained others, until after an anxious and subduing period the storm blew over.

Haacke's prodigality in sending abroad so much material eventually attracted public attention and he was freely criticised in the press, a matter of interest in that seemingly this is the first protest by the man in the street against undue exportations of Australian natural history specimens, the first expression of opinion that future generations of Australians might be interested in the fauna existing when the white man first invaded our shores, and when the animals and the culture of the aboriginals were as yet uninfluenced by European impacts and introductions.

This must have been a tempestuous period. Trouble arose all round, between Tepper, Zietz, Beazley and Haacke. Beazley brought complaints against his superiors to the Board. Part of the trouble may have been that at this time Zietz knew little English and when he was interviewed by the Museum Committee an interpreter was asked to attend in order that his statements might be understood.

Following this unhappy state of affairs, and with difficulties accumulating, Haacke applied for six months leave of absence on full salary as from November 1, 1884 and at the same time tendered his resignation, to take effect at the expiration of his leave. He also asked to have from the Board an expression of their satisfaction of his conduct, particularly "in the matter of Fijian collections said to have been sent to Germany" (apparently most of the William Owen collection, donated in 1860). The Board decided that a testimonial be supplied, divided into two statements each to be signed by the Chairman. The result was as follows:

(*) Larvae of blow-flies.

It is hereby certified that Dr. Haacke was Director of the Public Museum at Adelaide from November 1st, 1882 to November 1st, 1884, when he resigned his position, and the Board of Governors of the Public Library, Museum and Art Gallery of South Australia desire to express an opinion that Dr. Haacke is a gentleman of high scientific attainments, and that he discharged his duties faithfully and conscientiously.

In reference to insinuations published in letters to the Press that Dr. Haacke has improperly disposed of native weapons and other curiosities, the Board of Governors of the Public Library, Museum and Art Gallery of South Australia, at Dr. Haacke's request, certify that after investigation, the Museum Committee reported that in its opinion the Director had not in any case exceeded his authority to effect exchanges of duplicates with other Museums for such objects of interest as he desired to obtain.

For some time Haacke remained in South Australia and studied our jelly-fishes, maintaining contact with the Museum Committee. Later, he returned to New Zealand, and still later, when he became Director of the Zoological Gardens at Frankfurt, he continued to correspond with the Board.

Under New Management

The foundation stone of the west wing having been laid by Sir William Jervois on November 7, 1879, his successor as Governor of the State, Sir William Cleaver Francis Robinson, opened the new building on December 18, 1884.

The South Australian Institute ceased to exist on July 1, 1884, when there came into operation the Public Library, Museum and Art Gallery Act of 1883-4. The Board of the defunct Institute, under a special clause of the Act, became provisionally the Board of Governors of the Public Library, Museum and Art Gallery of South Australia, until the Board provided for in the Act was appointed.

The new Board was gazetted on August 14, 1884; as had been determined it consisted of five members appointed by the Government, two elected by the University of Adelaide, three by the Institutes Association of South Australia and one by each of the following bodies: The Royal Society of South Australia, The South Australian Society of Arts, the Royal Geographical Society of Australasia (South Australian Branch) and the Adelaide Circulating Library.

The Board met the day after it was appointed and immediately elected five Standing Committees, including a Museum Committee of eight members, of whom Dr. Edward C. Stirling was chairman. The Museum Committee, not always so strongly represented and with, of course, changing personnel, continued to function until a final Act separated the three institutions in 1940.

Robert Kay, whose title had now become "General Director and Secretary," in 1884 was deputed to undertake the general oversight of

the Museum during Haacke's leave of absence. Dr. Edward C. Stirling was in England and was asked to make enquiries for a suitable person to fill the position of Museum Director "at the present salary of £400 per annum." During the four years following the resignation of Haacke no suitable successor was available and in any case funds were so limited that a Director's salary could not be found. Therefore, with Kay as general administrator, it devolved upon the Museum Committee and particularly its Chairman, Stirling, to watch over the affairs of the Museum.

Stirling was of Scottish descent. His father, Edward Stirling, came to South Australia in 1839 and Edward Charles, born on September 8, 1848, was the eldest of eight children. He had a brilliant academic career. He was educated at St. Peter's College in Adelaide and left with the family for England in 1865, having gained a Westminster Scholarship the previous year. With his brother Lancelot he entered Trinity College, Cambridge, and the two young men travelled extensively in Europe during the long vacations. After graduating from Trinity College in 1869, B.A. with Honours in Natural Science, he became three years later and while a student at St. George's Hospital, a member of the Royal College of Surgeons of England, and also was admitted M.A. and M.B. Five years after this he was elected a Fellow of the Royal College of Surgeons and became D.Sc. (Cantab.); also he was M.D., Melbourne.

Stirling returned to South Australia in 1881 and was elected to the Council of the University of Adelaide in June of the same year; as already mentioned, very soon afterwards he was elected to the South Australian Institute Board as a representative from the University. One marvels that Stirling found the time to devote to his multitudinous interests. Apart from representing North Adelaide in the Legislature from 1884 to 1887, he was lecturer on physiology at the University, where he was chief founder of the Medical School.

Stirling was at once concerned regarding the relative paucity of Australian vertebrates (other than fossil material) in the Museum, remarking that the absence of anything like a representative collection of mammals and birds was especially noticeable. Of mounted specimens for exhibition only 12 Australian mammals and 60 Australian birds were left. Beazley, now Taxidermist and Articulator, was asked to examine the collections and found that, apart from mounted material, there remained a fairly good series of skins of Australian mammals, but of birds only 690.

The Museum, however, for the first time in its history was no longer a "one man show." It had a staff, small but efficient, and behind it the enthusiasm and drive of Stirling and his Committee. From this time onwards, as far as was humanly possible, the position was retrieved, and

with conspicuous success. True, some gaps remain; good collections of some of our species of furred and feathered animals are not possible now. The Night Parrot may be extinct. One of our fleetest and most beautiful wallabies, the Toolach *(Wallabia greyi)* has not been seen for years, and the mainland form of the scrub Wallaby or Pademelon *(Thylogale eugenii)*, seems to have disappeared, although once it was common near Adelaide, and at the beginning of the present century was still plentiful in some scrub-covered districts.

Kangaroos, Whales and Giant Birds

A communication received by the Museum Committee from C. G. Thomas of Parnaroo is of interest as, in South Australia, it assisted to fan the flames of an argument which continues to this day—the method of birth in the Kangaroos. The letter, dated June 25, 1886, stated that Thomas had "recently collected and opened a doe kangaroo and a doe Euro and had in each found an embryo in the womb, and offers to endeavour to procure specimens for the Museum of Adelaide."

Bottles and spirits were sent to Thomas with a request for preserved evidence. A little later in the same year, Stirling noted "that in the womb of one of the marsupials lately sent . . . . a young one had been found." At a meeting of the Royal Society of South Australia he then exhibited "a preparation of the genitalia of a female kangaroo, demonstrating the young attached by its umbilical cord . . . " Three years later in dissecting a female kangaroo he found an embryo about to be born.

This was corroborative evidence of a fact established 80 years before, namely that marsupial reproduction, apart from the short sojourn of the young in the uterus, does not differ materially from that of the higher mammals. For anatomical reasons the large median uterus present in the last-named has not been developed in the marsupials and consequently the young are born at a relatively early stage, tiny, naked and not completely developed. As in the case of other marsupials, the little kangaroo soon attaches itself to a teat, so firmly that in the earlier stages of growth it is removed with difficulty, the mouth sometimes bleeding as it is forced from the tip of the teat, which becomes globular after the embryo has fastened itself thereto. This often led kangaroo hunters and other folk "in the bush" to support the absurd theory that in some miraculous way the young is born "through the teat" or grows on the apical portion of it.

The actual births of kangaroos and wallabies have been witnessed on a number of occasions in the presence of witnesses and duly recorded. The earliest record in print of the observed birth and unaided progress to the pouch of an Australian wallaby appeared as far back as 1830, when

EDWARD CHARLES STIRLING

Honorary Director, 1889-1895 and 1913-1914. Director, 1895-1913. Honorary Curator of Ethnology, 1914-1919

an officer of H.M.S. *Success* in Western Australia witnessed the birth and the slow creeping of the young towards the pouch of the mother.

It is a remarkable circumstance that between October 1884 and October 1889 three examples of the Pygmy Right Whale *(Caperea marginata)*, extremely rare in Museum collections, were stranded on South Australian shores. This, the smallest of the baleen or whalebone whales and not exceeding 20 feet in length, had not been observed on our coasts before. Actually the species had not been seen in the flesh until by some trick of fate the South Australian specimens appeared. Probably less is known of the habits of Pygmy Right Whales than of any other cetecean; they are rarely seen by whalers and may be few in number.

All three South Australian specimens were recovered. The first came ashore at Brownlow, near Kingscote on the north coast of Kangaroo Island, and its mounted skeleton still hangs in the Museum. The second, a young male less than 8 feet in length, became entangled in a fisherman's net at Victor Harbour, Encounter Bay, in 1887 and the unmounted skeleton and baleen have been preserved. The last example, a male nearly 11 feet long, also was stranded at Kangaroo Island. The skeleton was cleaned and was sent to the Cambridge University Museum by Stirling, but before it was fleshed a cast of the head was made; replicas of the cast were forwarded to several overseas Museums and in one of them the baleen was included. Stirling, aided by Beazley, took measurements and photographs of the youngest of the pygmy whales and sent them to Professor Flower of the British Museum, who writing in acknowledgement of the information stated that it enabled him to clear up "some uncertainty which has hitherto existed as to the external characteristics of this whale."

The data concerning the three specimens were recorded by the writer over 40 years later.

In 1889, the Museum Committee purchased in New Zealand for £100 a good composite skeleton of a large Moa *(Dinornis elephantopus)*, the sternum in this belongs to another species. A fine ostrich, still on exhibition, was this year presented by the South Australian Ostrich Company, founded when the plumes of the bird were demanded by the ladies, but going out of business when fashions changed.

Stirling as Honorary Director

The year 1889 marked the appointment of Stirling as Honorary Director, as he himself modestly put it "partly as a matter of convenience, in view of correspondence with other Museums and their officers, partly as a matter of justice, as he is doing (and has done for several years) a large part of the work of a Museum Director"; he had been Chairman

of the Committee since 1882. This same year Dr. William Everard, one of the Board members elected by the Government, died; Everard had been a member of the South Australian Institute Board for 23 years, and his useful services had continued on the new Board and its Committee.

In Everard's place came, for one year only, William Austin Horn, who held a seat in the South Australian Legislature from 1887-93 as member for Flinders. A few years before, already interested in the Moonta copper-mine, Horn had invested in the opening up of the Broken Hill silver-lead field; his gifts to the Museum included 12,000 ancient coins, the valuable Heuzenroeder collection, which he purchased and presented. Horn was born in New South Wales in 1841, had come to South Australia early in life and was educated at St. Peter's College.

Stirling, in the capacity of Honorary Director, continued to control the activities of the Museum during the whole of its sojourn in the west wing. He was anxious to supplement the Australian ethnological material and it is to him that future generations are indebted for the initial large collections of South and Central Australian aboriginal objects. As one instance of his enthusiasm it may be mentioned that he prepared a circular, which was sent to police stations and telegraph operators all over South Australia, asking that every effort be made to secure the handiwork of our aboriginals. As a result large quantities of material were donated or purchased. Amongst outstanding presentations was an almost complete set of the implements and weapons of one of the tribes of the Musgrave ranges, sent in by P. St. B. Ayliffe; this was recorded as a "specially valuable donation." Ayliffe also collected ethnologia from near Carnarvon in Western Australia.

It is interesting to note the curious circumstances under which some material was acquired. Oswald B. Lower, an excellent private collector of Lepidoptera and then a pharmacist at Parkside, discovered at Milang an ancient carved aboriginal waddy which was being used as a perch in a fowlhouse! He rescued it from this unseemly fate but not wishing to part with it lent it to the Museum in order that a cast might be made; the Museum acquired the original 38 years later, when the important Lower collection of South Australian butterflies and moths was purchased.

Long after his departure from South Australia, Sir George Grey continued to send donations to the Museum at Adelaide. One of his outstanding gifts now was an excellent example of a New Zealand greenstone axe, or *Mere*; several attempts were made to steal this when it was exhibited, and it has been replaced with a coloured plaster cast exactly resembling the original, which is placed in safe storage.

Through the kindness of the then Governor of South Australia, the Earl of Kintore, in 1890-1 Stirling was enabled to accompany His Excellency and his party to Central Australia and the Northern Territory,

travelling overland from Adelaide to Port Darwin. As assistant he took with him Thomas Cornock, who for some years was engaged by the Museum as collector, he having some skill in taxidermy; a man named James Stowe drove Cornock's vehicle. Stirling soon found that the too rapid movement of the party northwards gave him little time for systematic collecting, so he left Cornock behind to carry on at a more leisurely pace. Further trouble was experienced in the Northern Territory, which was reached during the wet season, and Stirling wrote on his return that there "the frequent tropical rains, great heat, and luxuriant growth of rank grass, which sometimes reached 8 or 10 feet in height, made the work of collecting and preserving exceedingly difficult." Nevertheless some worthwhile material was secured. A specimen of the great white Carnivorous Bat was found in a cave near Alice Springs. This queer creature *(Megaderma gigas)* is often referred to in zoological literature as the Great Blood-sucking Bat but much later it was proved that it preyed upon smaller insectiverous bats. Apparently because of changing conditions in the interior, and perhaps a decrease in the number of small bats, the species died out; desiccated specimens have been found since in many caves. It is known, however, that *Megaderma* still exists in other Australian localities. Amongst the birds the expedition secured the Princess Alexandra Parrot *(Polytelis alexandrae)*; strangely enough the specimens were shot at almost the same place, Howell's Ponds, in the neighbourhood of Newcastle Waters, from which F. G. Waterhouse obtained the type material which was sent to John Gould. Prior to this the species was not represented in the Museum collection, indeed, it seems that the only skin available in Australia, and that a not very good one, was in the Dobroyde Museum of E. Pierson Ramsay in Sydney; two living specimens of the bird, however, were in captivity near Adelaide. An example of the very rare Pig-footed Bandicoot *(Chaeropus ecaudatus)* was found by Stirling in the hands of aboriginals "who had somewhat mutilated it." There is no doubt that the natives were generously recompensed for their loss of a meal and Stirling was able to save a fairly good skin and most of the skeleton. Altogether about 800 zoological specimens were taken, comprising 250 species, of which approximately 120 were new to the collections. More than 500 ethnological objects were secured and Stirling at this stage maintained that he did not believe that there existed anywhere else so large a collection as that now in the Museum; since then it has become many times as large, mostly by accessions during the present century.

The first known specimen of the amazing blind Marsupial Mole had been sent to the Museum in 1888. This was found at Idracowra Station on the Finke River by William Coulthard, who, attracted by some peculiar tracks, had followed them up and found the creature lying under

a porcupine bush. Not having seen anything like it before, he gave it to Charles Benham, a nephew of Albert Molineaux, who sent it to the Museum where it was examined by Stirling and Zietz. This example was in poor condition, having been eviscerated and then wrapped in a kerosene-soaked rag for its 1,000 mile journey south, but Stirling reported the discovery at once to the Royal Society of South Australia and to *Nature*. Some months later three more specimens were received, all males, but only one of them was in a good state of preservation. During the trans-continental trip arranged by Lord Kintore six complete examples (including four females) and one skeleton were collected and handed to Stirling, who was then able to furnish a full description of the species, which he named *Notoryctes typhlops*. J. F. Bishop, the book-keeper at Idracowra, kept the species alive for a time and made notes on its habits, which Stirling published, together with additional notes on the anatomy of the curious creature.

It is not known with certainty whether or not *Notoryctes* constructs deep permanent burrows as does the European Mole; Wood-Jones considers that the female may do so in order to produce her young. The queer marsupial burrows in the loose sandy soil of our arid regions in search of food, and it seems that it is driven to the surface after rain when the top soil becomes a little consolidated. It is at such times, when the surface is smoothed and consolidated by rain, that its tracks are readily discernible by aboriginals and others interested.

In general the Marsupial Mole resembles the African Golden Moles, which are unrelated insofar that they belong to the Eutherian or higher mammals. Stirling was quick to note the similarity in appearance and a few years later obtained specimens from the South African Museum for comparison.

Notoryctes has no external ears, the tiny auditory openings being concealed by the fine and silky hair clothing the animal. No eyes are visible and the tail, which is carried erect when the animal is above ground is reduced to a stump covered with hard annulated skin. The front feet are highly modified for digging.

Miss Rosa C. Fiveash, a private art tutor, was responsible for the excellent colour plates illustrating Stirling's descriptions. A well-known figure in her day, she trained pupils who sat for examinations under Harry P. Gill, in charge of the Art Gallery and "Director for Technical Art and Examiner."

Following the Lord Kintore expedition Stirling visited Europe, where he arranged many exchanges and made many purchases, paying particular attention to securing skeletons of large mammals from Gerrard's in London. Prior to this the anthropoid material had been building up. A few years before the Rajah of Sarawak had supplied three skeletons of

the Orang-utan from Borneo, four other Orangs had been "lent" by the Zoological Society of South Australia, and from Gerrard's had come skeletons and mounted skins of a female and an old male gorilla. The last-named, with its mate, has been exhibited for many years and apparently none but the Museum staff has noticed that it is furnished with teeth of a horse. A chimpanzee, mounted skin and skeleton, as well as human skeletons had been acquired. Other good anthropoid material, two gibbons and other monkeys had come from the Zoological Gardens, the Council of which to this day is a welcome contributor of their misfortunes.

Unfortunately for the Museum in South Australia, Stirling was generous in his distribution of *Notoryctes* material and "in the interests of science and without stipulating for exchanges" he presented specimens to the British Museum, the Museum of the Royal College of Surgeons, the Cambridge University Museum, and the National Museums at Paris, Berlin, Florence, Utrecht and Stockholm.

Stirling made particular enquiries and notes regarding "matters of museum economy" in the leading British museums and there is little doubt that this influenced for a while his future policy, especially in regard to the arrangement of the galleries in a new building, erected soon after for the South Australian Museum.

The Diprotodon

Walter Howchin, later to become Honorary Professor of Geology at the Adelaide University, in 1891 drew attention to the discovery of a skull of the extinct giant marsupial *Diprotodon* in the vicinity of Gawler. A. Zietz recovered this from its matrix, together with some other bones of the creature. This skull, not in perfect condition, was the third in the collections; two years before a fairly good skull had been secured from Baldina Creek, near Burra and in the same district fragments of a smaller one.

In 1830, Sir Thomas Mitchell discovered the first recorded remains of *Diprotodon* in the Wellington Caves, New South Wales. Since then bones of this marsupial, which was as large as a Rhinoceros, have been found in many parts of Australia and in New Guinea.

As noted earlier, teeth and fragments of bone belonging to *Diprotodon* have been received by the Museum from many parts of South Australia, including the Lake Eyre Basin; to this day remains are sent occasionally to us, found during the sinking of wells or bores, in excavating for bridges, or in fresh-water sand pits. Apart from remains found in caves these seem always to occur in swampy areas, or localities once lacustrine.

A few years before the discovery at Gawler, F. Brandis Ragless, of Callabonna Station found in a water-course near the margin of Lake Callabonna (until the end of 1893 known as Lake Mulligan) teeth and portion of a lower jaw of *Diprotodon* and these were sent to the Museum by his father, John Ragless. Then in January, 1892, an aboriginal informed F. B. Ragless that large skeletons were present in the actual bed of the lake, which these days is most times dry or boggy but not very often a "lake" in reality. This discovery was made known to Stirling and Zietz.

H. Hurst, who had experience in geological and palaeontological work in Queensland, was commissioned to go to Lake Callabonna and report. He arrived at Leigh Creek at the end of November, 1892, and left at once for the lake. Returning in December to Adelaide he stated that the fossils appeared to be much more numerous than was supposed; he suggested that a larger party should travel to Callabonna, estimating the cost of three months' work there at £250. Judging from the minutes, the Museum Committee had now become really enthusiastic. Stirling reported that with strict economy for the rest of the financial year £250 could be scraped up "to expend on a search for further remains of *Diprotodon*." Accordingly Hurst, with three assistants to dig out the bones, left Adelaide in January, 1893, to obtain a representative collection and to report further.

Towards the end of June a heavy fall of rain made the lake-bed boggy and impossible to work; Hurst returned to Adelaide with his report and a horse-drawn vehicle loaded with some of the bones he and his assistants had dug out. He was sent back a third time to pack the rest of the excavated specimens and it was found that about 80 Diprotodons were represented in the bones secured by this exploring party.

Lake Callabonna lies between Lakes Blanche and Frome and is connected to both by a series of channels. It is also connected with Cooper Creek by the Strzelecki and, occasionally heavy flood-waters from the Cooper flow along Strzelecki Creek and into Lake Callabonna, as well as into Lake Blanche. During a dry period salt water occurs a few feet below the surface of Lake Callabonna, and may lie on the surface in miniature lagoons and water-courses.

The then Government Geologist, indefatigable Henry Yorke Lyell Brown, was investigating an area not far from Callabonna at this time and made a trip to the Lake in order to see for himself the truly remarkable panorama presented by what is virtually a graveyard of these heavy marsupials. Brown furnished a report to his superior, the Commissioner of Crown Lands, and his personal impressions provide as graphic a description of the scene as one could wish. He wrote:

The principal locality is in the lake, about two miles from the shore, and skeletons of Diprotodon Australis are scattered over an area of several acres. The place where each skeleton is embedded is generally marked by a low out-crop of travertine limestone and gypsum, which forms a coating over the place where it lies, and is doubtless due to the decomposition of the bones. In most cases some of the bones or teeth are visible on the surface, and indicate the position of the body. One skeleton shows the outline of the head, backbone, and legs of an animal lying on its side as it was found. The position taken generally is a squatting one, the skeleton lying with back upward, the head on one side, and the legs spread far apart, and folded up under and alongside the body, and not embedded more than two or three feet from the surface. One remarkable thing is that the bones, although sometimes disjointed and broken, still lie close to the body, which seems to prove that the animal died at the place where and in the position in which it is found, and has not been washed down by floods . . .

Owing probably to the nature of the material they are embedded in, or to the action of the salt water, the bones and teeth are very brittle, and fall to pieces on being dried and afterwards becoming damp. Skulls are tolerably well preserved, as also are the shoulder-blades, bones of the pelvis, leg-bones, etc., whilst the vertebrae and ribs are generally in a bad state of preservation. The bones of the feet have been obtained from some specimens, showing that there were five toes on each foot, and that the heel bones protruded a good deal. The tail bones have also been found. The tail was small and short, and the extreme joint claw shaped. It is doubtful whether it showed at all in the animal when living. It is also evident that the forelegs were longer than the hindlegs.

The skull measures in some specimens three feet in length, and the length of the animal from the tip of the tail to the snout would probably be about ten feet; its height at the shoulder from five to six feet. The neck is comparatively short for such a size of head. The large size and width of the pelvis and shoulder-blades is remarkable, as also are the thickness of the limbs and the thickness and height of the bone which separated the nostrils. In one place marks like the casts of small grass stems are visible on the coating of carbonate of lime which is usually found on the surface overlying the skeletons. This may turn out to be the impressions of bristles or hairs. The cast of what is apparently the impression of a portion of a sole of a foot, or the fossilized foot itself, has been found, which shows that it was covered with pointed, conical-shaped prominences, which, from their unworn condition, indicate, that the animal did not travel over hard ground, but either frequented marshy places or was aquatic in its habits . . .

Besides the skeletons of the Diprotodon the legbones of a gigantic bird as large as the moa, bones and teeth of a large wombat, and a kangaroo have also been discovered by the Museum collecting party. The footbones of this kangaroo when placed in position make the length of the foot fourteen inches.

H. Y. L. Brown, looking to the future, made a wise recommendation, namely that the whole area of the lake where fossils occur be reserved

for future scientific exploration. As a result, in 1901 the greater portion of the lake was gazetted as a fossil reserve.

At this stage the Board of Governors of the institution considered that further work should be carried on by and under supervision of a responsible officer of the Museum. Accordingly, on August 11, 1893, Stirling and Zietz left for Callabonna, but soon after their arrival a shower of rain caused sheets of water to collect on the flats and filled the holes previously excavated. Stirling stayed five days and left the camp in charge of Zietz, being not well pleased with the methods used by the previous expedition.

Besides Zietz, the party consisted of Thomas Cornock, some men specially engaged for excavating, and two Afghans in charge of five camels which were supplied by the Government. Zietz had a really tough time for the next four months. His records show that during the whole of that period the weather was boisterous and that the party suffered considerable hardships. Meat and water were carried from the Callabonna sheep station, six miles away, by the camels, but went bad very quickly. As summer advanced, the water at the station ran short, and a supply had to be secured from a well still further from the camp. Firewood had to be gathered several miles away, as none was available in the vicinity. The camels became poor, and rabbits which swarmed in the neighbourhood caused damage to the excavated bones in their vain search for fresh water. The rabbits drank water from a salt spring at the base of a sandhill a hundred yards from camp and died there, or after crawling into the tents and packing boxes at the camp. In a frantic search for water they gnawed holes in the water bags. "In one night at Callabonna Mr. Ragless killed 1,400 with poisoned water, and what with drought and the ravage of these pests, which stripped the scanty bushes of every green leaf till they were nothing more than bundles of bare sticks, the surrounding country presented an appearance of desolation that defies description."

With this combination of wind, sand, heat and the stench of dead rabbits it is not surprising that the members of the party developed sore eyes and gastric trouble. Finally, towards the end of November, fell the last straw; heavy rain made further operations impossible on account of the extreme bogginess of the ground, so the party returned to Adelaide. Later Stirling published a generous statement, praising the fortitude and indefatigable zeal of Zietz in continuing this arduous task, and giving him the fullest credit for the recovery of a large amount of interesting material.

Most of the bones taken were of *Diprotodon*, but extinct kangaroos and a giant wombat *(Phascolonus gigas)* were also represented. Of unusual importance was the discovery, near the camp, of portions of skele-

tons of four large extinct Ratite birds, later named *Genyornis newtoni* by Stirling and Zietz; although parts of this bird had been collected long before in various Australian localities it had not been possible previously to diagnose its characters. The position of the Callabonna birds was indicated in each case by a small heap of gizzard stones "smooth and worn as if by attrition." Zietz noted that bird bones were sometimes encountered when *Diprotodon* skeletons were being excavated but were unavoidably destroyed.

As may have been gathered, the institution as a whole was at this time passing through one of its not infrequent periods of financial stringency. The Museum Committee soon exhausted its funds in backing the Callabonna project but at the critical stage Sir Thomas Elder gave £500 towards the expenses, enabling a much larger collection to be obtained than would have been possible otherwise. Elder, as a matter of fact, between 1864 and 1894 encouraged most of the expeditions to the lesser known parts of Australia; he endowed handsomely the University of Adelaide and by bequest enriched the Art Gallery in South Australia. There is in the Museum the mounted skeleton of "Gang Forward" a well-known English race-horse foaled in 1870 and imported by Sir Thomas in 1876; the animal died at Morphettville in 1899 and was presented to the institution by T. E. Barr Smith.

More Expeditions

The collections made by the Elder Exploring Expedition of 1891-2 next engaged the attention of some of the Museum staff. This expedition was lead by David Lindsay, who published his "journal" narrative in 1893. An exceptionally well organised and equipped party hoped to explore thoroughly the unknown country to the westward of Warrina on the northern railway. They passed over the great Western Desert and reached the Murchison District; an adverse season prevented them from carrying out the hopes of Sir Thomas, and early in 1892 the party was recalled.

Richard Helms, of Sydney, was the naturalist of this expedition. Besides contributing a useful anthropological paper he collected zoological material of which some, the reptiles, the few birds and mammals, and a part of the insects (beetles, cockroaches, grasshoppers etc.), found their way to the South Australian Museum; systematic reports were made by Stirling and Zietz (vertebrates), while the Rev. T. Blackburn and J. G. O. Tepper, dealt with the abovementioned insects.

The South Australian Museum supplied Helms with tubes, spirit and other collecting material, while Professors Archibald Watson and Ralph Tate, representing respectively Sir Thomas Elder and the Museum,

were deputed to supervise his equipment and to instruct him that all specimens obtained must be handed over to the Adelaide Museum before distribution.

The Royal Society of South Australia undertook publication of the scientific results of the Elder Expedition but, after production of about two-thirds of the records, ran out of funds; after a lapse of three years, Robert Barr Smith (the noted South Australian pastoralist, merchant and philanthropist) came to the rescue, and with his financial assistance all data were published in the *Transactions* of the Society between 1892-96, with Ralph Tate as editor.

In 1893, Stirling became a C.M.G. in recognition of his services to South Australia and to science, and the same year he was made a Fellow of the Royal Society of London. As a result of his researches he had become well known throughout the scientific world. The Queen Regent of Holland awarded him a gold medal for "services to art and science" after the National Museum of Natural History in Leyden had been enriched by him. He became an Honorary Fellow of the Anthropological Institute of Great Britain, and an Honorary Member of the Gesellschaft Naturforschender Freunde of Berlin, as well as a Corresponding Member of the Zoological Society of London.

At the beginning of 1894 William Austin Horn was busy fitting out an expedition to investigate the country between Oodnadatta and the MacDonnell Ranges. In April of this year a special Museum Committee was held, with the Lieutenant Governor in the chair and Professor Ralph Tate and Sir Charles Todd present. The chairman "explained that this meeting had been called at short notice to consider the desirability of asking Dr. Stirling, if his other engagements will permit, to accompany Mr. Horn's expedition for the exploration, in a scientific point of view, of the MacDonnell Ranges, in the interests of the Museum".

So, leaving Zietz to supervise the work of installation of cases and exhibits in a just completed north wing, which had been erected to provide separate accommodation for the Museum, Stirling as anthropologist and medical officer accompanied the Horn Expedition to Central Australia. Charles Winnecke, surveyor and meteorologist, led the expedition. Apart from Stirling and Horn himself, the other scientific members consisted of Professor Ralph Tate of the University of Adelaide as geologist and botanist, Professor Baldwin Spencer of the University of Melbourne as zoologist and photographer, J. A. Watt as mineralogist, and George Arthur Keartland, naturalist and collector. Spencer prepared a summary of the results, wrote a narrative and desscribed some of the zoological material. Winnecke also wrote a *Journal of the Horn Expedition*, which was published by the Government Printer in Adelaide.

Horn accompanied the party to Idracowra on the Finke River and as all was going well returned to Adelaide. From Oodnadatta, then the rail head, 2,000 miles were covered on camel back, the great lonely basin of the Finke being transversed.

At this time it would seem that the Night Parrot *(Geopsittacus occidentalis)* was by no means rare in the vicinity of Alice Springs. At the Stuart Telegraph Station it was noticed that several picture frames were covered with feathers of the bird which had been obtained from specimens captured by cats at night.

The four volumes in which the results of the expedition are recorded comprise a vast amount of geological, botanical, zoological and ethnological data. The anthropological part was written by Stirling, in conjunction with a paper by Francis John Gillen dealing with the manners and customs of the aboriginals of the MacDonnell Ranges. Gillen was then special magistrate and sub-protector of aborigines at Alice Springs where for the first time he met Baldwin Spencer, who visited him again the following year. As a result Gillen's manuscripts, covering a period from 1894—1898, were in collaboration published as *"The Native Tribes of Central Australia"* by Spencer and Gillen. Volumes 2 to 5 of Gillen's manuscripts for years have been preserved in the Barr Smith Library of the University of Adelaide together with an unpublished vocabulary of the Aranda languages. Volume 1 was given to Professor J. Burton Cleland, of the University of Adelaide, by the Gillen family, in recognition of his services in writing a history, as yet unpublished, of the activities of F. J. Gillen. Cleland presented this volume to the University in 1955. The bulky manuscript is now supplemented by Gillen's notebooks which were presented to the Museum by his family. The Gillen lantern slides and photographic negatives were purchased in 1910 by the South Australian Government and handed over to the Museum on conditions prescribed by Cabinet.

The earliest of Gillen's diaries in possession of the Museum covers a journey from Adelaide to Alice Springs, May 26 to June 6, 1875; this includes a "short vocabulary of native languages". The first of Gillen's published notes appears in E. M. Curr's *The Australian Race* (1, 1886, pp 416-421); wherein appear accounts by Gillen and R. E. Warburton "of the tribe which occupies the country around the Charlotte Waters Telegraph Station, each accompanied by a vocabulary . . ."

Other members of the staff of the South Australian Museum described sections of the Horn expedition material. A. Zeitz dealt with the inland fishes and three of the six species which he named are valid today. Tepper recorded the grasshoppers and the Rev. Thomas Blackburn, as honorary entomologist, some of the beetles. Edgar R. Waite, then in Sydney, reported on the rats, and in doing so made one of his

early contacts with the South Australian Museum, of which later he was to become Director. A lizard, a fish and a shell were named after Winnecke.

The Horn expedition led to some important additions to the zoological and ethnological collections of the Museum, including type specimens and a valuable series of the ceremonial wooden *tjurunga* of the Central Australian aborigines. In 1897 W. A. Horn handed to Stirling a supplementary donation of bird skins, representing 34 species, taken on the expedition.

Exhibits and Collections

While Stirling and Zietz were thus engaged, George Beazley (Taxidermist and Articulator), maybe a little apprehensive following Haacke's severe criticism, applied himself assiduously to his duties. Assisted by O. Rau and Noake, he became particularly active in the mounting of exhibits, preparation of skeletal material, and securing by purchase and otherwise ethnological collections. He added hundreds of mounted specimens, birds and mammals, to the exhibition halls and prepared hundreds of skins for the research collections. He evolved the idea of placing plaster casts of heads of mammals, made after skinning, in mounted mammals instead of fastening the skin around the original skull, which was thus not accessible for study; this to some degree may be said to forecast mannikin methods employed today in modern museums. He made collecting trips with Zietz to Kangaroo Island and the Pages, to Morgan on the River Murray, and elsewhere. In company with O. Rau he made a collection of skins of the larger marsupials at Winninninnie Station. He suggested Museum groups which would show naturally subjects such as a Wombat in its burrow, a Platypus in its nest, Kookaburras in a hollow tree, Mound-building birds with sections of their mounds, Echidnas with a termites' nest and so on. These proposals were carried out long after Beazley had returned to England. A shed was completed for housing the skeletons of the sperm whale and also that of a Rorqual *(Balaenoptera physalus)* which had been purchased, as a stranded specimen, some time before. This had been removed by Beazley and an extension of the shed, at right angles to the original, was soon erected to accommodate this and other material.

The Zoological and Acclimatization Society of South Australia, under the Directorship of R. E. Minchin, was attempting to establish a museum at the Zoo, or rather to continue to display specimens which had gone the way of all flesh. Beazley was approached and asked to mount animals which died at the Zoo but the Museum Committee did not regard this with much approval, and pointed out to the Society the inadvisability of establishment of a "rival museum" in Adelaide.

South Australian Museum Exhibit in the Colonial and Indian Exhibition in London, 1886

Life-size figures of aborigines formed the major feature of the first "diorama" to be installed in the South Australian Museum. A canoe was included and the whole depicted a scene on the lower Murray; the case was erected by Messrs. McDougall and Gow of Adelaide.

Beazley with his assistants, and in addition workmen employed specially for the purpose, spent much of the year 1885 procuring and preparing exhibits for the South Australian Court of the Colonial and Indian Exhibition, held in London in 1886. A truly imposing array was assembled—camels, various breeds of sheep (ten including a ram were mounted) Angora goats, Australian birds, mammals, fishes and reptiles as well as some plaster casts. Native trees and plants were secured in order to provide natural surroundings for the different groups to be set up. The life-sized figures of aborigines, in wax, were sent and attracted much attention. Gold ores then valued at £150 and other minerals also were lent for this exhibition. Beazley and O. Rau went to Kangaroo Island and the Pages Rocks in a ketch— the *Hawthorn*, commissioned for the purpose—in order to procure Sea-lions for the Museum as well as for the Exhibition.

The exhibits staged at the Colonial and Indian Exhibition comprised, in fact, one of the most ambitious efforts of the Institution in the direction of overseas display. A detailed description of the exhibit was published in the *Adelaide Observer* of June 5th, 1886.

The accompanying photograph shows portion of the natural history scene, occupying nearly one-third of the allotted space in the South Australian Court. It is of interest in that it comprises a diorama of sorts, which was described as follows:

In the centre of the broad and picturesque arrangement is the wurley with its native inhabitants. On the left is the blackfellow in his primitive canoe floating on the sheet of water whose sandy margin is fringed with flags, and populated by the iguana and other crawling things and birds living in the region of water. In the bushes and trees of this part of the scene are bright-winged paroquets, cockatoos, and the more sober-clad wattle bird, with the trunk of a tree showing opossums with their young. Above head is a laughing-jackass following in rapid flight the fall of a snake to the ground. An eagle holding a young wallaby in its talons soars suspended in mid-air over another part of the scene representing an emu in the corner sitting on her nest, and younger ones around; wombats coming out of their holes; wallabies and kangaroos, some lying and some eating. The side painting of coast scenery has a varied imaginative foreground of seals rising out of water, of sea birds on the shore, and of a native in a rocky part lighting fire by friction.

Meanwhile the Jubilee Exhibition Building had been erected on North Terrace and was opened for the first time on June 21, 1887, with

an International Exhibition to commemorate the jubilee of both Queen Victoria and the founding of the Colony. The Museum authorities had intended to stage a large exhibit, particularly as it was an Adelaide show, but seemingly so much effort had been expended on the London Exhibition, and so much urgent work remained at the Museum, that the idea of a special display was abandoned. Some collections were sent along, including most of the aforementioned gold and mineral specimens from the South Australian Court of the Colonial and Indian Exhibition. The gold ores had been returned by this time although some seem to have been melted down in London. The State derived very considerable benefit from the Jubilee Exhibition and the Museum profited greatly. The Sultan of Johore had sent a splendid collection of Malayan products, including a complete series of ethnological objects. These, through the South Australian Government, were presented to the Museum Committee; 150 pieces were retained and a goodly proportion, consisting mainly of woods and vegetable products, were handed to the Botanic Gardens Board for their museum. As a mark of appreciation a specially bound and embossed album of photographs was prepared, after a great deal of bother and discussion, and was sent to the Sultan as a mark of appreciation. The photographs included two views of the Malayan Court, and eight of the exhibition as a whole, 14 pictures of Adelaide, 24 of South Australia, seven of the far-north, and 13 of cattle and sheep.

The Victorian Commission of the Jubilee Exhibition had shown a large series of fishes from Hobson's Bay, and donated these; 20 of the species were new to the collection at the time. The New South Wales Commission had installed good New Guinea ethnological material—the Theodore Bevan collections from "the Douglas and Jubilee Rivers"; these were purchased, and a mineral collection was acquired which had been named by J. F. Carne and Thomas Ford of the Sydney Department of Mines.

The three wax figures of aboriginals sent to the Colonial and Indian Exhibition were shown again at the Jubilee Exhibition, when the Museum Board was awarded a "First Order of Merit" for their excellence.

An interesting side-light on these Victorian times is found in the minutes of the Museum Committee and concerns these figures, normally unclothed. When they were returned to the Museum, the committee was horrified to find that "the figure of the lubra was injured by having large nails driven into it to hold the drapery, which a few stitches would have done as well".

Museum collections *did* suffer from this constant moving about and a couple of years later the Committee decided "that past experience does not encourage the Board to strip their own collections for the purpose

of enriching International Exhibitions". This was not long after specimens had been supplied for the South Australian Court of the Centennial International Exhibition of 1888-9 in Melbourne, held in connection with festivities arranged to commemorate the first British settlement in Australia.

During the Jubilee year many other collections were donated. Worthy of special note is a set of Hindoo kitchen utensils and other ethnologia from Asia; some of these are now exhibited in an Indonesian Hall opened in 1954 at the Museum.

It is interesting to learn from notes made at this time that A. Zietz presented some excellent display suggestions. He proposed that ethnological objects, such as those from Malaya, New Guinea and Fiji, could be "explained" much better by the use of photographs showing them in use. He found it impossible to secure suitable pictures but the idea was reborn and carried out half a century later.

During this period the cabinets of Lepidoptera were enriched by presentations by Sir Edwin Smith, L. G. Browne and others of butterflies from Australia, India, Europe and America. An outstanding entomological collection was purchased from Mrs. Kreussler of Nuriootpa for £210, quite a sum in those days. This was a wise purchase in view of the rapid changes which were to take place in the insect fauna of the Mount Lofty Ranges. A large collection of foreign Lepidoptera, contained in two cabinets of 20 drawers each, was purchased from Oswald B. Lower of Parkside in 1892.

In the eighties, and a little after, Robert H. Pulleine, then a young man, and for a time a cadet in the Public Library, conducted a number of dredging ventures in Encounter Bay and secured a goodly amount of marine material, which found its way into the collections; some of this was described by the writer half a century later. It included some interesting forms seldom or never taken since Pulleine's trips. Dr. R. H. Pulleine eventually became one of the leading surgeons of Adelaide. The marine collections secured during this decade by A. Zietz, Dr. J. C. Verco, Bednall, Beazley and others, constituted a fine beginning for the much larger representation now in the Museum.

Among stranded marine rarities were two Sea Leopards (*Hydrurga leptonyx)* which came ashore on South Australian coasts and were sent to the Museum. The first was received in November, 1883. The second, secured alive but exhausted, was found towards the end of 1893 and until it died was taken in charge by R. E. Minchin of the Zoological Gardens, which then and until early in the twentieth century possessed a seal pond. The natural habitat of the Leopard Seal is far to the south, but single specimens occasionally make their way, probably

by accident, as far north as the southern coast of Australia. This applies also to another Antarctic species, Weddell's Seal *(Leptonychotes weddellii)* young examples of which are stranded, though rarely, on our south coasts.

Changes and Recruitments

Following a long period of activity, the irrepressible Beazley, forgetting his previous contretemps, gave Stirling cause to view him with disapproval. One does not have a complete story of all the trouble, but it has been related that on one occasion, in exuberant mood, he leapt on to the back of a Moose newly mounted for exhibition; to this day the unfortunate Ungulate certainly has a decided list to port. One has been told too, that he had entrusted to his care—again in the famous macerating house—a living venomous snake and that shortly he presented a pair of punctures on a finger, soliciting an order for liquids calculated to relieve his distress. Stirling, his analytical mind at work, measured the distance between the punctures and found this to be much in excess of that separating the fangs of the reptile alleged to have launched the attack.

Another practice said to have been carried out was that of recording criticism of superior officers and then including the epistles in the materials used in the stuffing of the larger mammals. If this be true, at some indeterminate date some posthumous vitriolics may again see the light of day.

Then there was trouble with the petty cash account and a complaint from a furrier in Rundle Street that Beazley's private commissions were interfering with his business. He was missing from the Museum from time to time, and although apparently he was not now breeding maggots in the macerating house for fishing enthusiasts, his habits "for a considerable time had been so unstable and so irregular as to render him completely incompetent for the discharge of his duties". His official services at the Museum terminated at the end of August 1892, but for a while he continued, in a private capacity, to mount specimens for the institution, to which finally he sold his tools and other equipment and departed from the scene, a colourful but erratic figure.

A collector of Australian birds, J. T. Cockerall, who once exchanged skins with Waterhouse, again made a relatively brief appearance at this period. Toward the end of 1890, the Museum paid him £12/10/- for 300 bird skins and on two occasions in 1895 advances were made to him for wages and expenses to be incurred on collecting trips to Yorke Peninsula.

The services of T. Cornock were dispensed with early in 1894 and in his place as a permanent officer was appointed Ferdinand Julius (Joe)

Rau who had been employed as fireman, and towards the end of 1893 had been engaged to assist with Museum work, at which he showed great aptitude. He and his brother Otto prepared an untold amount of material for exhibition and for cabinet during the next four decades. The Museum owes a great deal to the efforts of these two excellent taxidermists.

In 1894 also it was decided that Noake's time be wholly devoted to the Museum as Attendant, his work to include clerical duties.

With increased facilities, the activities of the Museum officers, honorary and otherwise, have left their mark in data and material during the occupation of the west wing. It may be said with confidence that at this period and to the present the results of individual effort within the Museum became more apparent and it would be difficult to outline this development without some further reference to honorary curators, who during the last decade in the west wing were instrumental in the building up of some sections.

T. C. Cloud, already familiar with the collections, became responsible for the mineralogical section just before the opening of the west wing and continued to supervise and add to the collections until he died 30 years later.

The number of specimens, relatively small prior to his appointment, rapidly increased. Minerals from the Wallaroo and Moonta mines were secured, while some of the smaller collections made by private individuals were purchased. At Cloud's request the proprietors of the Broken Hill Mine donated some of their various ores and minerals. Towards the close of this period Cloud was away from Adelaide, and Ralph Tate, then chairman of the Museum Committee, arranged the minerals in the first building to be delegated solely to Museum purposes —the north wing.

William Tompson Bednall was appointed Honorary Curator of Conchology in 1886. He had been a generous donor for the previous quarter of a century and 15 years before had commenced identification of some of the Museum shells. Until 1886, however, these had never been systematically arranged and classified. For many years to come much of Bednall's time was occupied with the molluscan collections. He made catalogues of both Australian and exotic shells and for the first time in the history of the Museum they were sorted out to form two separate collections. Dr. Joseph C. Verco, whose first interest in natural history had been fostered by F. G. Waterhouse, had commenced extensive dredgings for Mollusca, of which he was an ardent collector and careful student, and was accompanied by Bednall on sea trips off Kangaroo Island, in Yankalilla Bay and other localities.

With J. G. O. Tepper as salaried entomologist, the Rev. Thomas Blackburn of Woodville, whose name has been mentioned already, became Honorary Curator of Entomology in 1891, but for the previous five years he had been taking home the Coleoptera a case at a time for identification of the contents, an arrangement made with the Museum Committee in 1886. The influence of his work on Australian beetles is evident today.

A fleeting appointment, but a most useful one, was that of the Rev. William Roby Fletcher, who was Honorary Curator of Archaeology in 1893. Before this he had spent some time in Egypt and, acting on a commission from the Earl of Kintore, had made worthwhile contacts and procured a considerable number of archaeological objects which formed the nucleus of the present Egyptian collections. The smaller Ptolemaic mummy in the Museum was presented by Fletcher. His Highness the Khedive of Egypt earned the gratitude of the Committee for his generous contributions, and William A. Horn donated four very old Egyptian bronzes.

Early in 1892 a letter was received from Miss Amelia B. Edwards, Hon. Secretary of the Egyptian Exploration Fund, intimating that the President and Committee desired, "on behalf of the Society, to present to the National Museum of South Australia an inscribed column, described as follows: Two large fragments of an inscribed column from the ruins of the Great Temple of Harshefi (Usarphes) . . . (5-ft. 2-in. and 6-ft. 8-in. respectively)—material, the red granite of Syene, Tempo Rameses ii. XIXth. Egyptian Dynasty—circa B.C. 1500". Also saying that the capital of the column is wanting but can be restored in plaster, as a mould was to be taken of the capital of a similar column from the same site, which had been presented to the British Museum. This Ahnas column was duly received and with the capital reproduced in South Australian granite, a few years later was erected just outside the Museum.

Before his death in June 1894, Fletcher was in a position to report that the Museum possessed Egyptian material sufficient to warrant exhibition of the collection, but lack of space forbade this for a long time.

The North Wing

After Haacke's retirement in 1885, Stirling, then supervising Chairman of the Museum Committee, found that the Museum section of the west wing was hopelessly inadequate. All available space was filled to overcrowding and Stirling remarked that unless additional accommodation were provided little progress could be made.

How true now was Ralph Tate's forecast made a short seven years before—and the Museum section of the west wing had been occupied for less than three years.

THE NORTH WING OF THE MUSEUM
Photograph taken on completion of the building early in 1893

It was not long after the occupation of the west wing that the grave disadvantage of having a Public Library, Museum and Art Gallery in one building became glaringly apparent. Museum visitors must first traverse the Library Section and one can picture the annoyance of Robert Kay who, though General Director and Secretary, seems to have been interested in literature and art rather than in the Museum.

A suggestion, which if carried out would have vitally affected the history of the Museum, had been made during the Parliamentary session in 1882. Then the Treasurer proposed that instead of erecting a building specially for the Jubilee Exhibition of 1887 it might be advisable to complete the original design for the whole Institute block, using it, with exception of the west wing already built, for the Exhibition and afterwards allowing it to revert to its proper purpose.

A Commission was appointed and unanimously approved the Treasurer's suggestion. The Board of the South Australian Institute then happily announced: "It follows, therefore, that the whole Institute will be completed at a much earlier date than was expected". This was not to be, and the block in fact has never been completed. The Jubilee Building was built on North Terrace, to the east of the Library, Museum and Art Gallery; intended as a temporary structure it still stands.

By 1888 the Board was pressing the Government for immediate erection of a north wing, so that this could be made available for the Museum and at the same time free the west wing for the Public Library only. This was to be made possible by removing the Art Gallery also—to rooms in the front section of the Jubilee Building—and this move was made towards the end of the following year. The Library, however, immediately occupied the extra space thus gained.

The urgent need for further expansion was stressed by deputations to the Government which, though sympathetic, was not in a position to appropriate an amount for erection of this second addition to the proposed Library, Museum and Art Gallery buildings until the 1890-91 session of Parliament, when £10,000 was set aside for the purpose.

During the next financial year progress had been made with the red brick building which constitutes the north wing of the block, and by the early part of 1893 it was completed. This wing was not envisaged in the original plan of the seventies. It runs from east to west, where it abuts the rear portion of the west wing. It was now intended that the west and north wings, together with the as yet unbuilt east wing, were to form a "U", eventually to embrace the large central building of the plan, fronting North Terrace.

The north wing, or South Australian Museum building, was formally opened on January 12, 1895, by His Excellency the Earl of Kintore,

this being his final public act before leaving the Colony. Four days later the building was opened to the public for the first time. During the same year Stirling was appointed salaried Director.

Thus, almost 40 years after the founding of the South Australian Institute, the Museum was for the first time housed in a building provided solely for its purposes. However, the Museum, the Art Gallery and the Public Library, continued to be associated under a Board of Governors for a further 45 years.

3

The North and East Wings 1895 - 1915

Stirling as Director

The next 20 years, 1895-1915, covered a period of sheer hard work within the Museum, a concentration of detail which must have strained the patience of the staff many a time. For 15 years expeditions necessarily were few and did not carry them far afield. No attempt is made to touch upon all the activities of the staff. One must imagine the pickling, the stuffing, the identification of material, the voluminous correspondence, the quick attention to perishable accessions, and all the efforts that go into exhibition halls, as well as the building up and properly housing study collections. All this is dealt with in the annual reports of the sections. Large and important collections, and smaller ones far too numerus to mention, began to come in regularly, these having been made in the course of expeditions or by enthusiastic private zoologists, mineralogists and ethnologists—some of them amateurs but others with a specialized knowledge of the specimens they had gathered.

The guiding influence during this period of occupation of the north wing, profitable indeed in spite of difficulties, was furnished by Stirling, who had stepped into the breach when the Museum well could have suffered a long period of stagnation.

Inevitably, because of its constitution, the Governing Board was divided in interests but Stirling, through his Museum Committee, constantly pressed the claims of the Museum. Needless to say he met his own travelling expenses abroad, although most of his time in other countries was now devoted to the interests of the South Australian Museum; his overseas contacts and connections resulted in the drawing of a great deal of natural history material to Adelaide.

One can speculate as to the progress of the Museum towards the close of the nineteenth century if Stirling, already with some experience

of museums abroad, had not grasped the opportunities which circumstances presented. Professor Ralph Tate, Stirling's valued colleague, also was keenly interested in the welfare of museums, himself, it may be recalled, having been curator of the museum of the Geological Society of London. Reading between the lines of Tate's "Anniversary Address" to the Adelaide Philosophical Society in 1878 one can sense that he would not have been reluctant to have a finger in the affairs of the South Australian Museum, as indeed he did. In the absence of Stirling, Tate well may have been the driving force at this critical time.

It must be recognised that under Stirling was a staff which backed his plans with enthusiasm. A considerable part of the mounted furred and feathered animals on the exhibition galleries are due to the painstaking efforts of the two excellent taxidermists, the Rau brothers, while Tepper, and in particular A. Zietz, rendered invaluable service. Zietz showed some resentment when Stirling was appointed salaried, instead of Honorary Director, feeling apparently that his administration as Assistant Director, was not appreciated fully. He asked for divided control, Stirling to be limited to certain sections, he to others—but after a while difficulties smoothed out.

The small military force in Adelaide used the vacant area, partly enclosed by the L formed by the west and north wings, as a drill ground and soon it was realised that this interfered with the approach to the Museum. The Committee therefore pressed the Board to implement quickly a plan which had been formulated some time before, the planting of lawn and erection of the Egyptian column in front of the north wing.

Professor Edward von Blomberg Bensly of the University of Adelaide was appointed Honorary Curator of Archaeology in 1897 and resigned five years later, after having prepared descriptive labels for the Egyptian specimens then available at the Museum; to these had been added a series of antiques presented by the Egyptian Government. A year after his appointment the Ahnas column, with its capital reproduced in local granite, was erected, this being made possible by a donation of £200 by Mr. George Brookman (later Sir George), an art lover who soon after was appointed to the Board; he became also a member of the Legislature in South Australia.

A. Zietz, assisted by the small staff, had laboured assiduously and well in the transfer and exhibition of the collections to the north wing. So rapid was the progress made in occupying the two floors of this building, 230 feet in length, and so pleasing was the arrangement to Stirling, that he enthusiastically reported to his committee that Zietz "on whom fell the chief labour of the removal and re-arrangement of the

collections has dealt with this tedious and arduous undertaking with an intelligent energy that deserves commendation."

Although most of the exhibition material had been removed to the new halls, it was impossible to evacuate the whole of the west wing, now relegated to the Public Library. One of the large north rooms, some smaller rooms and part of the basement, continued to be used by the Museum staff for many years as store and work rooms. In fact, the residue of the collections in the west wing was not removed until almost a quarter of a century later, after the east wing was erected.

A series of misfortunes beset the Museum for the next three or four years. The first reverse concerned the specimens of gold ores, which had been shuffled from Exhibition to Exhibition during the seventies and eighties. On November 1, 1895, a thief forced open one of the ground floor windows and stole the exhibited ores. He escaped to Melbourne, where he was arrested on another charge of burglary, and some beaten up gold was found in his possession. This he admitted to be the gold contained previously in the specimens stolen from the Adelaide Museum. It was returned by the Victorian department of police and, disturbed by the pillage, Stirling instructed that all other material likely to attract theft be removed from exhibition.

Then the dampness. The lower gallery of the north wing is very literally a ground floor. On the upper terrace of the River Torrens, it is situated on, and at right angles to, a slight slope from North Terrace. The floor, at ground level, was simply asphalted and was continually damp during winter months; years later the sinking of a deep drainage well during construction of the east wing, and other measures, did away with this trouble.

These damp conditions had far-reaching effects. In the winter, parts of the exhibition cases swelled, so that the doors jammed and could not be opened in order to deal with mounted specimens becoming relaxed with moisture. During the summer the wooden backs of the cases shrunk, cracks opened, and the ever-lurking enemy of museum material, the beetle *Anthrenus*, made its way in, so that the staff were kept busy checking its depredations. Following this, termites (white ants) invaded the cases from the damp undersoil. A year afterwards they attacked the staircase and finally, adding insult to injury, the offices of the Director and Assistant Director. In 1898 a wooden floor, later covered with linoleum, was laid down. The Museum was closed for five months while this operation was carried on, the staff being driven almost frantic by the task of moving to and fro the cases and in finding temporary storage for some of the specimens.

When in 1897 the Board had asked the Minister of Education to authorize the installation of the wooden floor, raised on jarrah joists,

"apparatus for warming the Museum by means of hot water" was requested also. A coil heating system had been in operation in the west wing for 16 years past and had proved satisfactory. An apparatus intended to heat the Museum and dry out the damp was imported by the then Superintendant of Public Buildings, but it never functioned satisfactorily. After a trial during the winter it was found that there was generation in the pipes of an inflammable gas, the water did not circulate, and the temperature inside the building was raised scarcely more than two degrees above that of the air outside. In midwinter, 1899, Stirling reported that the furnaces of this contraption had been re-lit on July 3rd, and were working but "on two days since that day the highest temperature in the Museum has been *lower* than the *maximum* shade temperature outside". On July 23 of the following year the apparatus blew up; J. Rau, acting as fireman, had just left the site and so narrowly escaped injury. A vast amount of correspondence took place and engineers' reports were called for. Extensive alterations were suggested but the general consensus of opinion was that the apparatus was unsafe and apparently the whole matter was abandoned by 1903.

In 1901 Stirling went to Europe and America in order to visit museums, study their methods, and arrange exchanges. On his return he furnished a long account which is available in the published annual reports of the Board.

Some of his correspondence with the General Director and Secretary, the diminutive Robert Kay, is of interest. Very conscious of the lack of funds at home, he penned a letter from London, in which he related some of his impressions of museums in the United States. "Everywhere I was struck by the immense public and private liberality shown in regard to Museums and especially in regard to the equipment of Expeditions for the collection of fossils, living fauna and Indian remains, which I could not but contrast with the miserable means thought sufficient for these purposes in Australia and particularly in our own country". He wrote concerning possible exchanges with American museums "Could we only get together a decent collection of our native aboriginal things we could get almost anything we wanted of the American Indian articles . . . for there is literally scarcely a thing from our country in any of the American Museums." It would seem, however, that Stirling overlooked quite a good collection in the Field Museum at Chicago and the material in the Smithsonian Institution, sent from Adelaide to the Philadelphia Centennial Exhibition in the seventies. Stirling left a slice of the Yardea meteorite (see p. 21) with Ward's "Natural History Establishment" in Rochester, New York, and received in exchange slices of another siderite, a siderolite and an aerolite.

Year after year Stirling continued to stress the absolute necessity for increased space if the Museum were to maintain its position as a progressive institution. In 1905 he reported "The Museum is popular is shown by the fact that the number of visitors annually is equal to a quarter of the whole population of the State". This year, however, the attendance figures were much in excess of those for the preceding year, and apparently one had not to seek far for the reason of the sudden increase. Miss Siam, a well known and well-loved elephant at the Zoo had died and now was mounted and displayed in the Museum. Crowds flocked in to see this favourite giant, sadly missed by the thousands of children—and others—it had borne on its back at the Zoo. Next year, however, there were further increases in attendance and, with fluctuations, of course, the average annual figures continued to rise steadily until the present, the figure now standing at approximately a quarter of a million.

The Morgan Thomas Bequest

Dr. Morgan Thomas, one of the oldest medical practitioners in Adelaide, died in 1903, then having long been retired from practice. In his will, after payment of some legacies, he left the residue of his estate "to the Board of Governors of the Public Library, Museum and Art Gallery of South Australia, for the purposes of these institutions". The bequest, amounting to £65,679, came at a most opportune time and served as a stimulus to all concerned in the activities of the institutions.

There followed, naturally, long draw-out conferences as to policy respecting the windfall. In order to clarify the position in regard to the associated bodies the Board requested its solicitors to apply to the Full Court for judicial advice and direction as to the position of the urban, suburban and country institutes, as well as the affiliated societies. The Board was informed that it had no power to allot any portion of the bequest to the institutes or the societies but that the capital sum could be divided between the three departments (Library, Museum and Art Gallery) in such proportions as the Board might consider fitting. Finally it was decided that one-half of the bequest should go to the Library, then much lacking in sections of its books, one-fourth to the Museum and one-fourth to the Art-Gallery. It was further agreed that the capital sums remain invested in safe securities, a wise decision as the annual sum derived from this source, although not large, assisted to buffer the effects of lean periods and in the case of the Museum made possible the inauguration of a scientific periodical at a later date.

The Board erected a fitting monument to the memory and benificence of Morgan Thomas over his grave in the North Road Cemetery, while

appropriate bronze memorial plaques also are located in the Public Library, the Museum and the National Gallery.

Diptrotodon Again, and Other Fossils

The *Diprotodon* and other bones from Lake Callabonna, being heavily impregnated with mineral salts, were markedly hygroscopic. They were therefore moved to a northern room of the drier and warmer west wing in order to escape the damp conditions in the new wing. A. Zietz continued his tedious task of repairing and preserving the material; this entailed removing it from the encrusting and solidified mud in some cases. The work, he reports, was greatly prolonged because of the re-absorption of moisture by the bones during the winter. In this work of restoration he was now assisted by his son Frederick Robert Zietz, then student apprentice at the Museum.

In 1896 Stirling and A. Zietz were busy drawing up descriptions of the Callabonna bird fossils. There had been great stringency of late years in Museum funds and the Royal Society of South Australia granted a sum of money for preparation of the necessary illustrations. Regarding the fossil bird, Stirling reported to his Board "This we propose to name *Genyornis newtoni*. It may be provisionally regarded as an ancestral form of the emu." Zietz had preserved successfully as type material: "One much damaged skull; one sternum slightly imperfect; four complete legs and feet; one nearly complete tail; one nearly complete wing and other odd wing bones; two pelves and a number of vertebrae and ribs." Duplicate legbones and some casts were now sent to other museums.

Stirling and Zietz soon prepared two papers on this large Ratite bird; these appeared in the *Transactions of the Royal Society of South Australia*, 1896.

Stirling visited England between December 1896 and April 1897 and while he was away Zietz and his son restored the feet of the skeleton of *Diprotodon*; these had not been described adequately previously and Stirling and Zietz the following year completed a description of the manus and pes. This was submitted to the Royal Society of South Australia, the Council of which for a while was unable to find the funds for publication. Eventually, in 1899, the paper appeared in print, forming part 1 of volume 1 of the large *Memoirs* of the Society; part 2 comprised a reissue and amplification of the description of *Genyornis* together with the physical features of Lake Callabonna, in order that all accounts might be brought together in an imposing form.

Before leaving Adelaide for his trip to Europe and America in 1901, Stirling had made arrangements with Professor Ray Lankester and Dr. Arthur Smith Woodward for the sending of bones of *Diprotodon* to the

British Museum of Natural History. He had selected for London the long bones of all four legs, the bones of one fore and one hind foot, a set of the vertebrae of the tail, the sternum, clavicle and marsupial bones, together with plaster casts of all the individual bones of the restored fore and hind feet. All these were packed and forwarded by A. Zietz; they were delivered at the British Museum while Stirling was there and he notes in a report to the Museum Committee that they suffered very little damage during transport. The arrangement was then that the British Museum should be put in such a position in respect to *Diprotodon* bones that it could make a cast of the entire skeleton, two replicas of which were to be supplied to South Australia. The London Museum already had in its possession a skull which it was considered could be improved by some remodelling; Stirling offered to assist this proposal by sending photographs and drawings of parts of the Callabonna and other skulls in more perfect condition than corresponding parts in the British Museum specimen. The remittance abovementioned was to constitute a first and principal instalment of the material necessary for the project and the only portions of the skeleton now required by the British Museum to complete a cast were most of the vertebrae and the ribs.

On returning to Adelaide Stirling had reason to regret having made this arrangement, for he found that during his absence Zietz had met with far greater success than was anticipated with restoration of the vertebrae and ribs of one particular animal, of which most of the other skeletal parts were available. Stirling immediately placed before his Committee the proposition that under the altered circumstances this material should not be sent away but that in order to keep faith with the British Museum casts be made of the vertebrae and ribs, and that replicas of these, together with a certain number of other original ribs and vertebrae, should be sent away. Stirling wrote: "Of course the necessary modelling and casting would be an expensive job but under all the circumstances it seems to be the most satisfactory arrangement we could make if only we can find the man to do the work." Not long afterwards the man was found in the person of Robert Limb, who for 18 years was responsible for many of the casts now on exhibition in the Museum. Limb had received his training in plaster moulding and casting with the once well-known firm of Barnes and Neate, in Adelaide; Gustave Adrian Barnes, son of one of the partners of this firm, later followed Harry P. Gill as curator of the Art Gallery.

So began the preparation in the South Australian Museum of a replica in plaster of the whole skeleton of *Diprotodon*. By 1906 the individual bones, moulded and cast by Limb, were assembled and placed on view. A. Zietz and his son, and the Rau brothers, as well as Limb,

assisted in the final mounting. The reconstructed skeleton is a composite. Stirling writes concerning the original bones: "These were too brittle and, in many cases, too fragmentary to admit of their being themselves mounted as a skeleton; moreover no individual skeleton was complete in itself." As a matter of fact a really perfect and undistorted skull is yet to be discovered.

A photograph of the skeleton, as mounted under Stirling's supervision, is here reproduced, together with a contemporary sketch of the animal as it was thought to have appeared in life. This drawing, based on the outline of the mounted skeleton, was made in 1907 by Charles Howard Angas of Angaston, son of John Howard Angas, nephew of George French Angas (who it will be recalled was Secretary of the Australian Museum in Sydney) and grandson of George Fife Angas, one of the founders of South Australia.

On July 12, 1912, Lord Denman (the then Governor General), Lady Denman, the State Governor (Sir Day Hort Bosanquet) and Lady Bosanquet, visited the Museum; Stirling showed the party the *Diprotodon* material, in which it is recorded "the visitors were particularly interested".

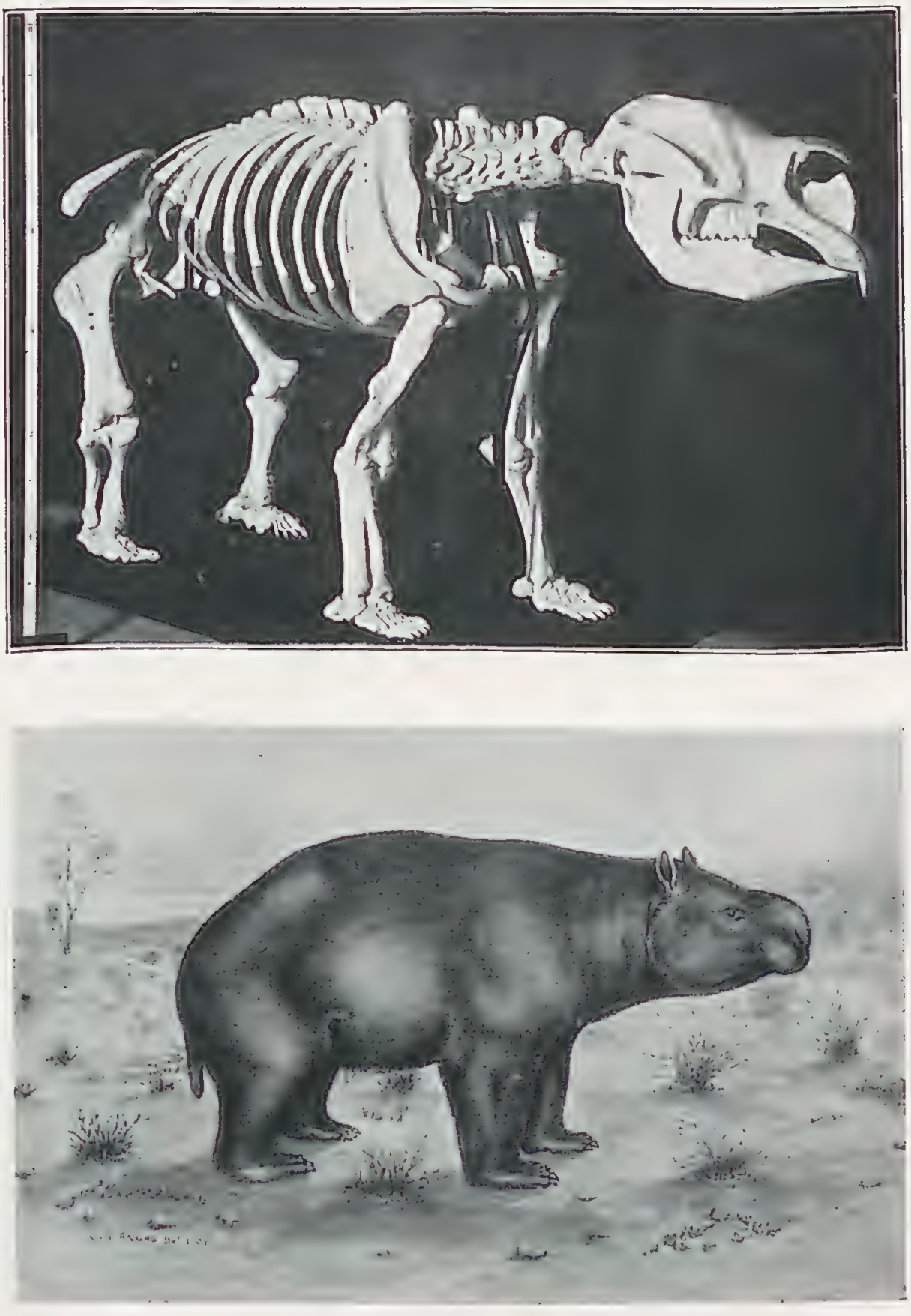
This plaster skeleton and selected original skulls and other bones were exhibited in the north wing until erection of the east wing of the block was completed, when they were removed to the Australian Court.

During the first 12 years of occupation of the north wing there was a good deal of activity in the palaeontological section, apart from the long-continued efforts in reconstructing the Lake Callabonna fossils. A year or so after the opening of this building a plaster cast was received of the skeleton of the Great South American Ground Sloth *(Megatherium americanum)*, an extinct giant once abundant; this was articulated and placed on the ground floor, where it still stands.

Towards the close of the century Stirling, H. Y. L. Brown and others collected a varied assortment of fossils in the Lake Eyre Basin, working on the Warburton River.

R. T. Maurice, already noted as a generous donor of ethnological material, in 1906 presented two mounted skeletons of New Zealand Moas, a large form *(Dinornis robustus)* and a smaller species *(Anamalopteryx casuarina)*; these were purchased by Maurice, in Japan, of all places.

A fossil tree "believed to be a unique specimen of its kind in Australasian collections" was erected on the lawn in front of the north wing in 1909. The fossil was originally discovered, in several pieces, by J. G. Reuther, about 40 miles north-west of the Kilalpaninna Mission Station, and was purchased from him out of funds provided by income from the Morgan Thomas Bequest. This siliceous petrification of a



Skeleton of *Diprotodon* and attempt by Charles Howard Angas to represent the marsupial as a living animal; 1907

tree trunk, considered to be that of a species of *Eucalyptus*, has now been standing on the site selected by Stirling for nearly half of the period of existence of the South Australian Museum.

A. Zietz, no longer young, was still carrying out a certain amount of field work. In 1906, only three years or so before his official connection with the Museum ended, he visited with Robert Zietz the fossil swamp at Salt Creek, near Cape Jervis, and originally discovered by R. M. Robertson many years before. The swamp had given up such significant material that Zietz's report on this occasion is worth quoting:

During the last thirty years considerable quantities of bones have been removed from this swamp, and presented to the Museum. We were particularly anxious to obtain bones of the so-called pouched lion *(Thylacoleo carnifex)*, of which the skeleton, excepting the skull, is almost unknown. In this place four right halves of the lower jaw were found, and presented by Mrs. Robertson some years ago. This established the fact of the former existence of this extinct marsupial in the locality, but our most careful search added only a few fragments of a skull to the remains already obtained. The best specimen secured is a lower jaw of the giant wombat *(Phascolonus gigas)*. Other bones found were those of several species of kangaroos, including a lower jaw of a very small species of *Macropus*. Besides these we found a number of bird, reptilian, and fish bones. Numerous fragments of large kangaroo bones, which apparently had been crushed by some carnivorous animal, showed distinct toothmarks upon them. We also made a collection of native stone implements from the various old camping grounds in the neighbourhood of Normanville.

The following year Stirling made a further note of interest concerning Pleistocene fossils in South Australia:

From Kangaroo Island we have lately received a small collection of fossil bones of *Diprotodon, Nototherium*, and of some extinct species of kangaroo. The bones were much broken and worn, but the collection is interesting from the fact that this is the first occasion on which remains of these large marsupials have been found on the island and the first time that *Nototherium* fossils have been recorded from South Australia. A further collection of fossil bones has, by the courtesy of the Woods and Forests Department, been received from the "Specimen" Cave, Naracoorte. This contains some undoubted remains of the so-called marsupial lion *(Thylacoleo)*, and may perhaps on further study be found to contain also bones of this little known animal that have not yet been discovered. Both these deposits are well worthy of further investigation on the spot, and it is intended that this shall be done.

An interesting acquisition in 1910 was portion of a jaw of the "Tasmanian" Devil *(Sarcophilius ursinus)* from Yorke Peninsula; previously there had been little evidence of the existence of this species in South Australia. During this year a cast of the *Diprotodon* skeleton was sold to the Australian Museum, the seventh which had gone to other institutions.

Collections and Collectors

The Rev. Thomas Blackburn, later Canon Blackburn, had been offered and accepted the position of Honorary Curator of Entomology in 1891 "In recognition of his valuable services rendered . . . . in identifying coleoptera, in which he is a specialist." He and Tepper were associated for the greater part of two decades, an association doubly severed by the retirement of Tepper and the death of Blackburn. Some extensive entomological collections covering a wide variety were acquired during this period. Tepper was an excellent field worker and by his personal efforts greatly enriched the entomological and other material in the Museum.

From 1897 until the time of his retirement Tepper wrote a long report each quarter-year on entomological donations made to the Museum "with notes on beneficial or injurious habits of insects, remedies, etc., respecting the more important species." These were published in the *South Australian Register*, *The Advertiser* or *The Adelaide Observer*. Reprints of the articles were purchased by the Board and distributed by Tepper to each donor and to departmental entomologists of other Australian States. This practice alone led to considerable additions, the sum total of small consignments, and no doubt did extend appreciation of the usefulness of the Museum. Preparation of these lengthy efforts must have occupied a great deal of Tepper's time; today they supply useful records of the local insect fauna at this period.

It had been noticed that donations of native fauna were falling off and Stirling remarked with regret, after his return from England in 1897, that South Australian mammals and birds were becoming more difficult to obtain and reiterated his opinion that the Museum representation in these groups was not all that could be desired. Further, he notes that a few old aboriginal implements, a shield, wooden vessel, spear-thrower and spears from the River Murray had been purchased in London! In half a century it had become almost impossible to secure "old style" implements of one of the largest aggregations of aboriginals in South Australia.

It was in 1896 that the Calvert Exploring Expedition had set out to investigate the deserts between the upper Murchison and the Fitzroy in north-western Australia; in 1897 the anthropological and zoological collections taken by this expedition were handed over to the South Australian Museum by Calvert's representative, A. T. Magarey. Though not extensive, the material was of interest in that it came from a practically unknown part of Australia. The largest part consisted of birds which were sent by Stirling to Alfred J. North, then Ornithologist at the Australian Museum in Sydney, who prepared a *List of Birds*

collected by the Calvert Exploring Expedition in Western Australia. This was published by the Royal Society of South Australia and included useful field notes made by George Arthur Keartland, naturalist to the Expedition.

Professor Krause of the Berlin University was in Australia in 1897 and the 82 aboriginal skulls in the Adelaide Museum were submitted to him for examination and measurement. With the collections in New South Wales and Victoria, Krause was able to muster a total of only 200 skulls of Australian aboriginals. The South Australian Museum series, however, rapidly increased after this period. In 1911 a burial ground was discovered at Swanport on the River Murray during reclamation work. About 100 skulls were then secured and, in all, remains of double that number of individuals recovered. The Commissioner of Crown Lands (then the Hon. Crawford Vaughan) at once issued orders that all discoveries of native remains on Crown lands in future must be sent to the South Australian Museum. Ever since this the Police Department has rendered invaluable assistance and today the collection of skulls numbers over one thousand.

The Pacific Island ethnological material had so increased by 1898 that it occupied the whole of the wall-cases on the southern side of the Museum. This was soon augmented by Fijian weapons and tools, 133 in all, presented by James Angas Johnson. Ethnologia from some parts of Australia were still not very well represented, this applying particularly to Queensland. The beginning of a good representation from this State was made by purchase of a large collection from Clement Wragge of Brisbane. There being no room to exhibit this it was stored temporarily in the west wing.

A valuable gift of bronzes from Benin in West Africa was made by David Murray in 1899. These included a staff of office, a battle axe, and a mask representing a human head, surmounted by a carved elephant tusk. It was in front of objects such as this last, which probably once stood on the altars of Benin City, on the Guinea coast and near the mouth of the Niger River, that human sacrifices took place, which earned for the place the terrible name "City of Blood." How this particular example came to Adelaide is not known, but probably it was brought back by a soldier in the Boer War.

Stirling now noticed for the first time aboriginal cylindro-conical stones, the purpose of which is unknown. These were sent in by Thomas O'Neil of Albermarle Station on the River Darling in New South Wales. As a matter of fact, one of these stones had come in from Encounter Bay in South Australia many years previously, but had been classed as a hammer stone or pestle and its presence was realised only two years ago. During the present century many hundreds of examples have been dis-

covered in the north and east of the State, and to the north coast of Australia in association with old camp sites, but their purpose is still a mystery.

Four Tasmanian Tigers were received in 1899 from the Adelaide Zoological Gardens, this constituting a welcome addition to the material of the species then in hand. This carnivorous marsupial *(Thylacinus cynocephalus)* is known also as the Marsupial Wolf or Hyaena, and today it is thought by some to be extinct. The records of the Zoological Society of South Australia show that the animal was on exhibition at the Adelaide zoo during the last decade of the nineteenth century and probably before. Three adult and two young examples of the Tasmanian Tiger were mounted and placed on exhibition in the Museum.

Fossil remains show that the "Tiger" was once an inhabitant of the mainland and that it must have been plentiful in South Australia. When the white man came to Australia he found it confined to Tasmania, where it may linger still in some remote and inaccessible areas.

Stirling was anxious to grasp every opportunity of acquiring collections gathered by private enthusiasts, being quite aware of the likelihood that they would be desired in other quarters. The Museum was still very short of funds, although Stirling himself was drawing a salary considerably less than that of the Assistant Director. In November, 1899, he felt compelled to report to his Board that allowing for salaries, and commitments totalling £20/10/0 "This leaves a balance of say £20 for all contingencies for the remainder of the year (7 months)." In the same memorandum he drew attention to various matters which he considered essential, pointing out that the previous year the Museum allocation had suffered a material reduction to meet the requirements of the Public Library. He wrote further: "The Entomologist urgently calls for additional insect cases and it appears to me that if we are to keep up this department we must provide what is wanted for the keeping of his specimens." Applications by the Museum officers for increases in salary were in hand and no provision had been made "for the purchase of any specimen, however important, or for the printing of labels . . . Such a position as we are in if unrelieved, seems to indicate, for the rest of the year, a period of absolute stagnation for what should be a progressive institution." Finally he emphasized "the desirability of purchasing the late Mr. Guest's cabinet of Microlepidoptera which being a South Australian and—what is still more important—a named collection of a little-known group should never be allowed to leave the colony."

E. Guest had resided at Balhannah, in the Mount Lofty Ranges. His collection was the result of 20 years' labour and contained numerous type specimens; the small moths had been named mainly by Edward Meyrick, the eminent English specialist on the group. The collection

included more than 2,500 specimens comprising about 738 species, and was housed in an English cabinet. Associated with it were three volumes of Meyrick's papers, as well as various manuscript diaries and notes covering the period of Guest's activities as an entomologist. The whole was purchased during the following year and entomologists of the future were to bless Stirling for his persistence. The Guest material is specially mentioned because today it stands as the backbone of the Museum collection of Microlepidoptera for the South-East of the State and parts of the Mount Lofty Ranges, which are now occupied by Mediterranean flora; consequently, with their food plants gone, many of the moths in question have disappeared for ever in the field, and are to be seen only in the Museum cabinets.

Stirling's correspondence with Robert Kay in 1901 is particularly pertinent as indicating the trend of his main interests at this period. The Lake Callabonna discovery and the acclamation which he was receiving already for the work thereon by himself and Zietz gave a decided fillip to his support of palaeontological research. The acquisition of fairly good representative Australian ethnological material was turning his thoughts more and more in the direction of anthropology. Already he had reported at length on the Swanport graveyard, detailing the methods of burial and so on.

At a meeting of the Royal Society of South Australia in 1898 he had proposed a resolution which was carried unanimously:

> That whereas the aborigines of South Australia are rapidly disappearing, it is desirable in the interests of science and of our successors that a comprehensive and enduring record of the Australian race in fullest anthropological and ethnological sense should be undertaken before it is too late.

Additional exidence is found in Stirling's "Report on his visits to Museums in America and Europe in 1901." He says "it is possible, and in my opinion it is highly desirable, that in these two departments of Ethnology and Palaeontology the South Australian Museum might be made to acquire, in reference to Australia, a reputation such as the Christchurch Museum has acquired in relation to New Zealand."

Since the retirement of Haacke, however, something much more than a good start had been made. The Museum collections really were growing, and growing rapidly. Within a quarter of a century, more than three-fourths of all the birds known to occur in Australia were represented by skins in the collections. But in 1902 pressure on the public finances led the Government to reduce the grant to the whole institution; only £90 or so was left in the Museum cash-box for the year, after salaries were provided for. Stirling was gloomy—he could not continue to print labels for exhibits—he had pocket money sufficient

only to buy materials to keep the preparators and professional staff busy. A bad beginning for this year, finances at low ebb and seemingly no chance of obtaining the natural-history and ethnological material which Stirling coveted for the filling of gaps in the collections.

Suddenly, however, the fortunes of the Museum improved—the year 1902-3 was remarkable in that donations were not only more numerous but were of unusual scope and value. The most notable were as follows. R. T. Maurice (explorer, of independent means, and third son of Price Maurice, the pastoralist) in the past had provided relatively small collections, ethnographical and zoological, made during trips inland from Fowlers Bay. Now he presented an extensive collection, mostly gathered by himself from the arid districts bordering the Great Australian Bight or from the then almost unknown areas traversed by him during his numerous expeditions. Stirling was particularly gratified to find that the collection consisted for the greater part of aboriginal material with full data—spears and other articles made by the natives, as well as their foods. It comprised specimens gathered from Central Australia, from the Alligator River in the Northern Territory, the Kimberleys in Western Australia, and from the vicinity of Fowlers Bay in South Australia. It had been the joint property of Maurice and Charles Winnecke, then recently deceased, and included the valuable Winnecke collection of land shells, as well as a great number of zoological specimens, birds, mammals, reptiles and insects.

Then by bequest Dr. James Phillips left the Museum one of the largest collections of Mollusca it had yet received.

For years Richard M. Hawker of Bungaree Station had been presenting skins prepared for mounting of large mammals shot by himself in various parts of Africa. Now he donated a Wapiti and the skin of an unusually excellent Rocky Mountain Goat, which he had shot in Montana, U.S.A. These generous gifts led Stirling to inform his Committee that perhaps they did not fully realise their value, saying that Hawker's African Buffalo, which the taxidermists had recently mounted, would cost about £75 if purchased from a dealer, while other of his large mammals would sell at from £20 to £50 each. The good display of large African and other extra-Australian mammals in the Museum is due to a great extent to the practical interest of R. M. Hawker, who also enriched the ornithological cabinets with his gifts of foreign birds.

A few years later Major Victor M. Newland contributed further mammals from British East Africa. V. M. Newland was a well-known figure in the Zoological Society of South Australia and the Museum until his death in 1953.

In 1902 Stirling accompanied Dr. Joseph C. Verco on dredging trips in order to secure marine creatures and in doing so fostered Verco's

long-continued association with the Museum, an association which in a few years was to vitally affect the development of the conchological section of the institution. Verco's exploits at this time undoubtedly stimulated activity in marine collecting. As soon as the ill-fated Federal Trawler *Endeavour* was ready for use a letter was sent to the Federal Minister of Fisheries asking that the South Australian Museum might share in the results of the trawling ventures, and this request was courteously acceded to.

The Museum had now outgrown almost hopelessly its accommodation, and Stirling drew attention to this in a lengthy and detailed statement to the Board. One of his paragraphs is interesting as it reflects again his increasing absorption in Australian ethnography, as well as his respect for activities of museums in the United States:

It is also, perhaps, not inappropriate that I should in this place offer the additional pleading on behalf of the Museum that lies in the contemplation of the rapid decline of the native race, and, in spite of the partial success of efforts for their preservation, of that of the indigenous fauna of Australia. It is, for Natural History, unhappily inevitable that in a comparatively short time Museums will be the only places where relics of the aborigines and examples of the many singularly interesting forms of animal life can be seen. Compatibly with our exiguous means we have made all possible efforts to secure the preservation for all time of such objects, but much still remains to be done in this direction, and it can readily be understood that unless this be done soon it can never be done at all. Even with such conspicuous groups as the mammals and birds, our collection does not contain more than about two-thirds of the existing species. Meanwhile, many forms are vanishing or, at least, rapidly declining in numbers, and are more difficult to procure. We have already allowed whole tribes of natives to disappear without our having become possessed of a single authentic relic. Posterity may well blame us for this general Australian neglect, which stands in such unfavourable contrast to what has been done for the indigenous races of America.

In 1904 the attention of the Board was drawn to an advertisement inserted in the *London Mail* by the Beni Hasan Excavations Committee, offering to certain museums specimens of Egyptian pottery. Mr. John Gordon, then in London, applied through the Agent General for South Australia for a donation to the South Australian Museum, generously guaranteeing the cost of transport. As a result, 39 examples were presented, all about 4,000 years old.

Considering the relative rarity of the Platypus *(Ornithorhynchus anatinus)* in South Australia, it is worthy of note that in 1905 the Adelaide Zoo possessed a specimen from the Lower River Murray; this died and was sent to the Museum, one of several local examples in the collection.

Records of the occurrence of the Platypus in South Australia are not abundant, although the species still occurs here; its actual haunts fortunately are known to few. The first specimen to be noted was sent by Captain George Grey to the British Museum while in December, 1867, a specimen was found on Robert Davenport's property at Macclesfield and was sent to the Museum. It was said at the time that this last was "the first that has been found in these parts, or so near to Adelaide." On the authority of A. Zeitz, however, the duck-billed platypus was "numerous" in the River Torrens near Adelaide in the early days. Towards the turn of the century a skin of one from near Strathalbyn was sold at auction, and the creature has been reported also from near Myponga, Mount Compass, Nairne, the Back Valley Branch of the Inman Valley, the Lower Murray, and the Glenelg River in the south-east of the State. It is known still to occur in the Lower Murray and may even linger in some remote parts of the interior; N. B. Tindale (now Anthropologist at the Museum) and the writer were informed that a specimen had been seen in a northern area in the twenties of the present century, while Dr. Herbert Basedow considered that certain of the aboriginal rock-carvings at Deception Creek, near Copley, are strongly suggestive of the platypus.

A. Zietz and his son late in 1906 collected in the large scrub areas of the Clarence and Richmond Rivers in New South Wales, obtaining excellent representative series of birds, reptiles, Mollusca and insects as well as a wallaby new to the Museum collections.

Two notable additions were made in 1907. The first was a single specimen, a male rhinoceros which since 1885 had been an inmate of the Zoological Gardens at Adelaide. The skin was mounted and displayed in the Museum, while the skull and other parts of the skeleton were preserved for future reference. The mount, labelled as "*Rhinoceros indicus*" was on exhibition for 40 years before its significance was discovered. Dr. Harold C. Coolidge, visiting Australia on UNESCO business in 1948, pointed out that in reality it was an example of the rare Lesser One-horned Rhinoceros *(Rhinoceros sondaicus)* probably from one of the Sunda Islands. This is the rarest of the living species of *Rhinoceros*. Because the horns were sought after for use in China as medicine, few male specimens have come into Museum collections. Apparently only a score of mounted skins have been preserved, six of these being males. The species is on the verge of extinction, although one small breeding herd survives in Java.

Even more important was the acquisition by purchase of Reuther's ethnological collection, comprising many hundreds of aboriginal specimens, mostly from the district east of Lake Eyre, but some from Central Australia. Included was a unique series of 385 aboriginal objects known

as "Toas." The Rev. J. G. Reuther, for many years superintendent of the Kilalpaninna Lutheran Mission Station, had gathered extensive data and material relating particularly to the now extinct Dieri Tribe at Cooper Creek, 50 miles east of Lake Eyre. He was by this time living in retirement at Gum Vale, near Eudunda in South Australia. A. Zietz and his son Robert were sent there to inspect and report upon the collection, which was then purchased by the Board.

Stirling immediately made known this noteworthy addition in his annual report of 1907-8, illustrating his remarks with a coloured plate. The toas are described by him as follows:

The significance of the toas may be described as topographical in the sense that each one represents and, as will be presently described, serves, under certain circumstances, as an indicator or signpost to a particular locality. The shape and colours of the toa, as also its patterns, markings and appendages, depict ideographically, and sometimes realistically, either certain physical or other natural features, actual or legendary, of the locality; or, in a similar manner, these details may have reference to some episode which is believed to have occurred in association with the place during the numerous legendary wanderings of a group of supernatural beings, known as "Mura-mura," whom Mr. Reuther designates Demigods. In fact, it may be added that it is from the presence of such natural features or from these legendary episodic happenings to the Mura-mura that the native place-names in most part derive their origin, and the account of the latter events form the basis of most of the numerous native legends of this district. The toa also bears the name of the place it represents, with the addition of the suffix "ni" or "ri", which indicates "direction towards".

These objects are used in the following way:—When a native is about to break camp and move to some other locality, the appropriate toa, representing the place to which he is bound, is placed in one of the shelters about to be deserted, the pointed end being stuck into the earth and signs being made on the ground in front of the shelter to draw attention to its presence within. By this means the natives inform their friends, who can recognise the significance of the toa, of the place to which they have gone.

Seven years later, following Reuther's death, the Board purchased a set of 12 large manuscript ledgers and three maps made by him. The books include a dictionary and grammar of the Dieri and a great deal of descriptive matter concerning this and adjacent tribes in the region of Lake Eyre. The volumes contain also a detailed description of the Toas and in all comprise a useful contribution, as study material, to Australian anthropology.

Further large accessions of anthropological material were acquired between 1911 and 1914. Hitherto the collections, by this time unusually rich in Australian crania, included no Tasmanian skulls; in fact only about 123 are known with certainty to exist. Two were now secured by

purchase. Ethnological material from Melville and Bathurst Islands was expanded into representative collections, mainly by purchase. Stirling noted in 1914 that the workmanship of these natives, comparatively little known in 1895, "has already begun to show deterioration in quality as compared with that of earlier consignments." Auction marts, mission stations and private collectors—all were drawn upon to supplement the constantly increasing ethnographical collections. From the Rev. Carl Strehlow was purchased a large series of aboriginal articles from the MacDonnell Ranges, including very many decorated objects *(anatantji* and *waninga)* used in totemic ceremonies. Strehlow was missioner at Hermannsburg for years and his *Mythen, Sagen und Marchen des Aranda-Stammes in Zentral-Australien,* Frankfurt am Main (1907) is well known. A similar collection was procured from the Rev. O. Liebler but in addition were numerous *tjurunga,* weapons, utensils and other articles of general use in the MacDonnell Ranges. After examination of these acquisitions, Stirling expressed regret that in past years so much Australian ethnological material had found its way to foreign countries but signified his pleasure that these two particularly good collections were to be retained in the country of their origin.

At about the turn of the century the ornithological collections were large enough to attract the attention of researchers elsewhere. Alfred North, of the Australian Museum, had in preparation his four-volume work *Nests and Eggs of Australian Birds (1901-1914);* the title does not describe explicitly the contents, which include extensive field notes and descriptions of birds. At his request skins were sent to Sydney for his examination, while a similar loan was made to the Western Australian Museum.

In 1911 Robert H. Pulleine brought in skins of birds from Queensland and from the north of the last-named State was acquired the bower of Newton's Bower-bird *(Prionodura newtoniana)* the largest of the bowers constructed by members of this family.

Beginning a New Regime

A. H. C. Zietz retired in December 1909, as the Board put it "under the septuagenarian regulations." He was complimented on his devotion to the affairs of the Museum covering the previous quarter of a century, his success was applauded, and he was granted eight months long service leave on salary; he died in Adelaide at the age of 82.

Tepper attained the age limit soon after A. Zietz, having occupied his position for 28 years; he retired in June, 1911, and died in Adelaide in 1923, aged 82.

The writer knew A. Zietz and Tepper in their latter years. Both were lightly built, bearded figures, still vigorous and with a keen interest in their chosen fields. Zietz, learning of a mutual interest in fishes at our first contact referred to the disappearance, or decimation, of some of the smaller species formerly abundant in the River Torrens at Adelaide due to the introduction of exotic fishes. He referred particularly to the Chequered Gudgeon *(Mogurnda mogurnda adspersus)* a beautiful species in which the male cares for the eggs, which are attached to stones or maybe, in an aquarium, to the glass sides. This fish was at one time much sought after by aquarists overseas because of its interesting habits.

Tepper was a heavy pipe smoker and his room was redolent of a not unpleasant mixture of napthalene and tobacco. A. Zietz, like Stirling, smoked cigars, but consumption in the case of the first-named, with Germanic economy, was limited to one per diem. In the morning about one-third of this was smoked, at lunch time another third and at the end of the afternoon the remainder formed a filling for his pipe. The writer still has his famous case, capable of holding one cigar only.

Soon after his father's retirement Robert Zietz was placed in charge of the ornithological collections, which had been supplemented by a moderate series of egg-clutches of 250 Australian species. The exotic collection was augmented by a fine series of Birds of Paradise, Hummingbirds, Pheasants, New Zealand birds, and a collection of bright-plumaged African birds presented by R. M. Hawker. R. Zietz himself secured birds in the field. He became a foundation member of the *South Australian Ornithological Association* in 1899 and a member of the *Royal Australian Ornithologists' Union* in 1900. Thirteen years later, on behalf of the Museum, he accompanied an expedition of the last-named body to the River Murray, collecting ornithological and other natural history specimens.

R. Zietz at this time made an interesting observation relating to the measure adopted for protection of our birds. "The marked decrease in the donations of native birds and eggs during recent years may probably be attributed to the enforcement of the Birds' Protection Act, for most of those received are birds of prey, which are unprotected."

The Birds' Protection Act of 1900, with its *Amendment Act* of 1903, as well as the *Animals Protection Act*, were in operation at this time.

Dr. Douglas Mawson, then lecturer at the University of Adelaide, commenced his long years of association with the South Australian Museum in 1906, when he went to Wallaroo to catalogue and pack a large mineral collection which he had recommended for purchase. This collection represented the labour over a period of 20 years of J. H. Dunstan of Wallaroo Mines. The selection made by Mawson comprised over 1,500 specimens, many new to the Museum, and including an unusually

large proportion of rare or not easily obtainable minerals; a further series from the Dunstan collection, and again chosen by Mawson, was purchased from his estate 48 years later.

Mawson, tall and athletic, delighting in physical effort and fearless of personal danger, was eminently fitted to lead later the explorations of Antarctica which made him famous the world over. These expeditions, epic and at times heroic, have been narrated in detail elsewhere. Worthy of record, however, is a comment by one of his colleagues, giving his opinion that the results of Mawson's undertakings were due in no small measure to the meticulous care with which he attended personally to the smallest detail of organization.

Mawson was born at Bradford in Yorkshire, and when very young was brought to Sydney by his family. He was educated at the University of Sydney. In 1902 he was demonstrating in chemistry at Sydney University, in 1903 was conducting geological investigations in the New Hebrides and in 1905 became lecturer in mineralogy and petrology at Adelaide.

Mawson was appointed Honorary Curator of Mineralogy at the Museum in 1908, and his work in this capacity was interrupted only by his expeditions and visits abroad. At the time of writing his active interest in the Museum extends for longer than that of any other single individual—the whole of the last half century. In 1934, then Professor Sir Douglas Mawson, Kt., Bach (1914), O.B.E. (1920), B.E., D.Sc., F.R.S., he was appointed by the Royal Society of South Australia as the representative of that body on the Board of Governors of the Public Library, Museum and Art Gallery of South Australia. He held that position until 1940, when the Museum became a Government department, separated from the other two institutions. He was then appointed by Cabinet as a member of the Museum Board and later become Chairman, a position he retains at the present time.

Apart from the Dunstan collection, other valuable accessions were received during the first decade of the twentieth century. Dr. J. Angas Johnson purchased for £150 and presented a large series of minerals, chiefly Australian. An outstanding purchase was that of the T. Hall comprehensive collection of Broken Hill minerals, there being about 1,000 large specimens and many smaller ones. Mawson reported that this "is the best collection of Broken Hill minerals that is ever likely to be available for purchase now that the Aldridge collection has been transferred to the Sydney University. Magnificent exhibits . . . . are represented. As mining operations have passed out of the oxidised zone, such can never again be obtained."

Four original Australian meteorites were also acquired during this period. The first, weighing about 40 pounds and composed of nearly

DOUGLAS MAWSON

Honorary Curator of Minerals, 1908-1956

pure nickeliferous iron, was discovered near Arltunga in Central Australia; this was purchased and named the "Arltunga meteorite." The "Cadell," a 7¼ pound aerolite, was found about three miles from Morgan on the eastern side of the River Murray and was presented by Charles H. Bannear of Morgan. A fine aerolite weighing 122 pounds fell on Kulnine Station, near Wentworth, New South Wales, and is known as the "Kulnine meteorite." G. Arnesbury supplied the "Carraweena," a stone of 63½ pounds found in Central Australia in 1914.

The School of Mines at this time secured a large iron meteorite, then considered to be the finest yet obtained in South Ausralia. This was the "Murnpeowie meteorite," found in Central Australia about 16 miles north-east by east of Mount Hopeless and weighing 2,520 pounds. Members of the Board were disturbed that this specimen had not been added to the collection in the Museum and recorded their feelings. "It is a matter for regret that two separate institutions, almost next door to each other, should be in competition in this matter. A conference has taken place between representatives of the governing bodies of the two institutions with the hope of overcoming this defect, but no practical solution has yet been devised." Eventually a compromise was reached when Museum preparator Robert Limb prepared from the original a plaster cast which was exhibited with other meteoritic material; in 1955 the original meteorite was lent to the Museum for temporary exhibition.

Because of Mawson's participation in the British Antarctic Expedition of 1907-9, the leader, Lieutenant (later Sir Ernest) Shackleton, presented to the Museum skins of the Crab-eating Seal, Emperor and Adelie Penguins, the Skua Gull and a named collection of rock specimens, all from the Antarctic.

Mawson prepared a long paper, published in the *Memoirs of the Royal Society of South Australia* in 1911, dealing with a collection of chiastolites; polished sections of these minerals at this time were then sold by jewellers as Australian "lucky stones." Some years previously a select collection had been purchased by Stirling from G. R. Howden, who discovered the crystals, which are developed to a remarkable degree in the Bimbowrie district of South Australia. Through the enterprise of Howden most museums possess chiastolites, but little concerning them had been published until Mawson described over 1,000 specimens.

In October, 1911, Mawson left as leader of the Australasian Antarctic Expedition, 1911-1914, the Museum having contributed towards his zoological collecting gear; during the previous year he had been in England to make arrangements for the voyage. The *Aurora* was fitted out and a number of Greenland sledge-dogs were purchased.

Arthur Mills Lea, Government Entomologist at Hobart, Tasmania, was chosen as successor to Tepper. Lea, a busy, bustling and vital

personality, took office as the South Australian Museum Entomologist in 1911, just a month after the retirement of Tepper.

Lea was born near Sydney in 1868. He commenced his entomological career in 1891, when he joined the Department of Agriculture in New South Wales. As Assistant Entomologist he travelled over many parts of that State, studying especially the insects affecting adversely potatoes, tobacco and citrus fruit. In 1895 he was appointed Government Entomologist of Western Australia, and for four years his work was concerned chiefly with insects destructive to plants.

Lea later related a quaint little story concerning his first meeting with Tepper, which took place on the Adelaide Railway Station when Lea was *en route* to Perth to take up the office just mentioned. As the two entomologists shook hands Tepper said, "I am *so* glad to meet you. You know, we are like kings, we seldom meet our equals." A fitting comment on the rarity of official entomologists in Australia towards the close of the last century.

In 1899 Lea accepted a similar position in Tasmania, and in that State carried out research on the insect pests of fruit. He was instrumental in stamping out two outbreaks of the Mediterranean fruit fly which occurred in Tasmania during his 12 years in that State. Also during this period he sent several consignments of useful living insects to England, South Africa and the United States, and several times travelled over parts of Victoria and New South Wales, collecting and studying at first hand insect pests.

With this extensive experience in the field, and his knowledge of beetles in particular, Lea served the South Australian Museum for 20 years, the collections today bearing silent witness to his two decades of untiring effort.

In South Australia Lea's knowledge of economic entomology continued to be of the greatest service to farmers, orchardists and hosts of others. Soon after coming to Adelaide, in addition to his duties at the Museum, he was appointed Acting Entomologist to the Department of Agriculture, and became lecturer on forest entomology at the University and a member of the Entomological Research Committee; for years he lectured to all graduating school teachers. He was never idle and so regulated his labours that daylight hours as far as practicable were used for close examination of his beloved insects, particularly beetles, while his evenings were occupied in writing manuscripts for publication and other tasks.

During his first year at the South Australian Museum, Lea reported that in his opinion there was not sufficient duplicate insect material in the collections to make possible a large and colourful gallery display. He was

ARTHUR MILLS LEA
Entomologist, 1911-1932

sent therefore on a collecting trip and his report of activities during four months spent in the eastern states is typical of him. "In New South Wales I collected about Sydney, Galston, Mittagong, Lawson, Katoomba and in the National Park; in Queensland about Brisbane, Mount Tambourine, Mungar Junction, Gayndah, Rockhampton, Bluff, Emerald, Barcaldine, Longreach, Winton, Hughenden, Townsville, Magnetic Island, Cairns, Kuranda, Tolga, Atherton, Yungaburra, Malanda, Nelson and Harvey Creek. Many thousands of specimens of insects (also other specimens of natural history such as shells, spiders, crustacea, frogs, fishes and reptiles, birds, etc.) were obtained . . . . . " The same year he collected at places near Adelaide and about Port Lincoln, Murray Bridge, Gawler, and Angaston, paying particular attention to insects that occur as commensals in nests of ants, obtaining species new to the collections and to science.

This year also, by the death of the Rev. Canon Blackburn the Museum lost the services of an honorary entomologist who had worked for 21 years in the interests of the Museum. Fortunately it was possible to secure his extensive collection of insects, comprising about 45,000 specimens, principally Australian, as well as part of his specialised library. Blackburn's collection is a general one but is particularly rich in beetles. It is still the only good collection from the West Coast of South Australia. His Hawaiian material is also very good and when received included many types, some of which were sent to the Museum at Honolulu years later.

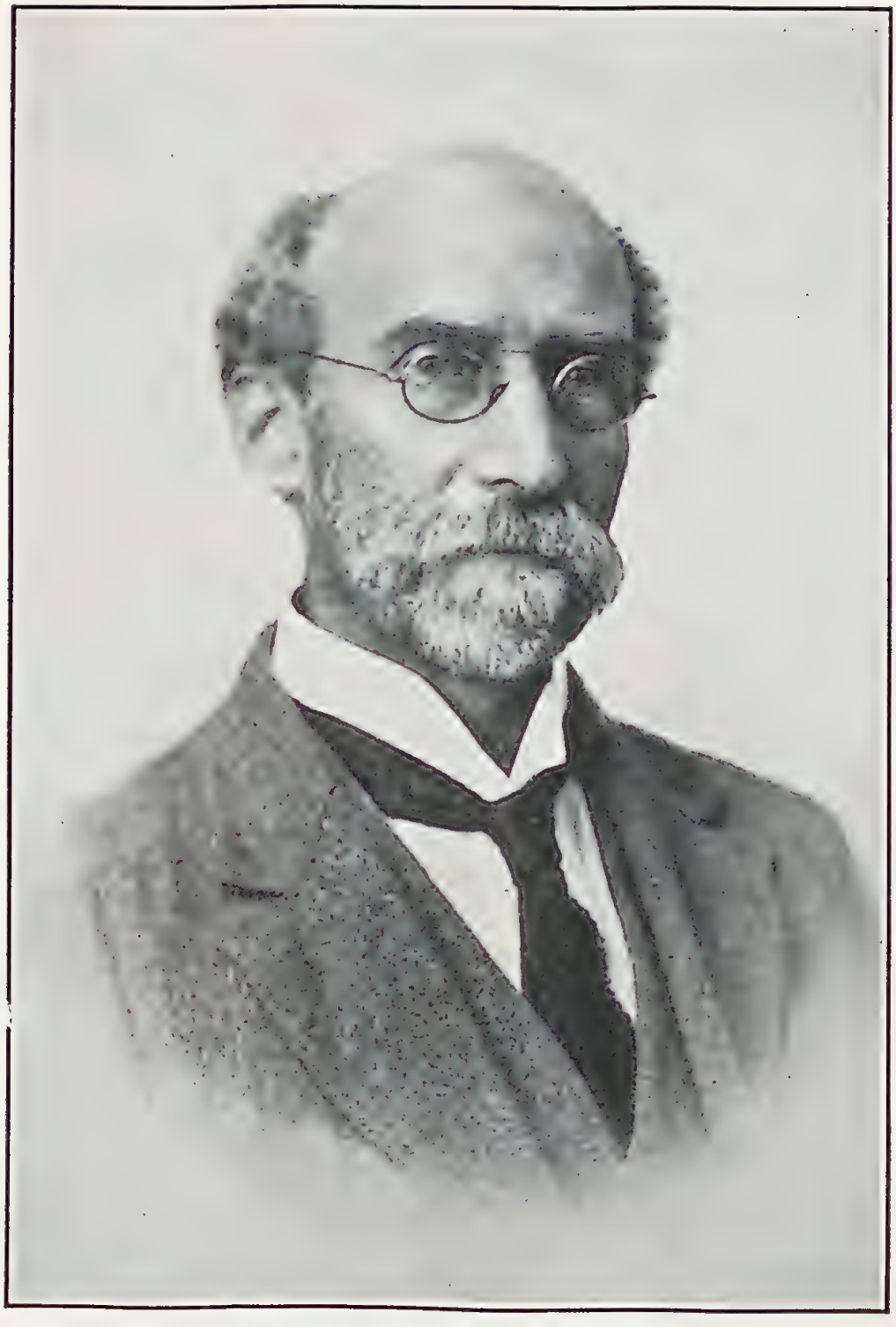
Next year Lea published a paper "The late Rev. Canon Thomas Blackburn B.A. and his Entomological Work." In preparing this Lea compiled a list of the new species of beetles described by Blackburn—over 3,000 of them—and spent a considerable time locating and examining the types, which were sent to the British Museum of Natural History, co-types being retained in Adelaide. Lea had pinned the insects collected by himself in New South Wales and Queensland; these occupied 45 large cabinet drawers. Further he had commenced a revision of an economically important group of beetles, preparing many drawings of details of the insects. Lea reported that: "During the year, 8,727 entomological specimens were sent or brought in for identification. The naming of so many specimens takes up much time, both in the identification and in correspondence, and at first appears to be of little benefit to the Museum, but it undoubtedly leads to the addition of many specimens that would not otherwise have been obtained. Interviews also consume much time for which there is often no immediate show, but they also often result in subsequent donations." In all, Lea reports, 13,086 insects were presented to the Museum this year.

Risking wearisome detail, this record of work occupying exactly two years is given as an example of the continued drive and fervour of Lea. Already he had fanned the enthusiasm of amateur collectors and an almost unbelievable amount of insect material flowed into the Museum. His instructions regarding the collecting and preservation of insects were always minute; one may mention, for instance, that for the guidance of persons securing and preserving material in New Guinea he prepared 12 pages of typescript.

One of the best ideas ever brought forward for the housing of entomological collections in the South Australian Museum was proposed and implemented by Lea. This was the provision of wooden cabinets of a standard size, with glass-topped drawers of absolutely uniform overall dimensions, 19½ inches by 19½ inches and 2¼ inches in depth. The all important detail is that all drawers are interchangeable, irrespective of how many scores of cabinets are eventually occupied. This system is particularly advantageous when dealing with a very large collection such as that in the South Australian Museum, and one which moreover is constantly added to. Unlike collections of larger zoological material, such as mammals and birds, represented by fewer specimens, sheer weight of numbers render detailed card-indexing a herculean task and an impossibly expensive one. With Lea's arrangement, however, the insect drawers themselves are shuffled into an order based upon a definite classificatory system; thus, providing additional cabinets are constantly supplied to accommodate accessions, the scheme is elastic and utilitarian, and it is a simple matter for an entomologist to locate the group which he desires to examine, assembled in one place in the series.

Other advantages resulting from standardization soon became apparent and thereafter the general principle has been applied throughout the study collections.

Late in 1912 Tepper returned to the Museum for a short time in order to mark more clearly some 164 types of species which he had described as new, thus putting these beyond dispute. This year marked the engagement as collector of Walter P. Dodd, son of the once well known entomologist Frederick Parkhurst Dodd, of Kuranda, Queensland. With W. P. Dodd in the field it was hoped that existing gaps in the collections of mammals, reptiles and insects would be filled. Dodd was commissioned first to go to Western Australian and if possible to work his way north to Port Darwin. He left Adelaide in September and before the end of the year Lea was so satisfied with the results of his efforts that he emphasized the desirability of having a collector permanently in the field. Dodd, commencing his work in south-western Australia, slowly made his way to the north-west, thence to the Northern Territory, including Melville and Bathurst Islands, and finally to north Queensland;



EDGAR RAVENSWOOD WAITE
Director, 1914-1928

just as he had commenced to secure specimens in this, his home State, his engagement was terminated, apparently because the cost of his expedition of 18 months or so was considerably larger than was originally expected.

If Dodd had any fault as a collector it was that on occasion he crammed more specimens into his containers than was reasonable. Reptiles and mammals were so overcrowded in metal drums that the alcohol in which they were placed for preservation became diluted by their body fluids, and the animals in consequence suffered some decomposition. On the whole, however, Dodd made a large and very significant contribution to the collections, particularly in the birds (432 skins from Western Australia and 479 from the Northern Territory) and outstanding in the insects—the last named a traditional interest in the Dodd family.

Dr. E. C. Stirling resigned as from December 31, 1912 his position as Director of the Museum, after 31 years of service. The Board presented to him a "handsome illuminated address" and appointed him once more Honorary Director, a position which he occupied for a brief period, presenting in fact only one annual report in that capacity.

During his Directorship Stirling occasionally invited the staff of the Museum to his garden at Stirling in the Adelaide Hills and then one of the show places of the State. His property *St. Vigeans* was named after the village in Scotland from which the Stirling family originally came. The garden was particularly noted for the Rhododendrons and rare plants introduced by him. Stirling's love for his garden was often evident. During his visit to Europe and the United States in 1901, he noted some of his impressions in letters to Robert Kay. In one of these he writes: "This is the first Spring I have seen in England for 20 years and I find the country just lovely. I was in good time to see the Rhododendrons in their prime . . . . I am pleased to find that, except for the size of the bushes mine compare well with these here." Again from Monterey, California, he comments on the El Monte Hotel "standing in a most beautiful garden of 126 acres in which I counted about a hundred trees and shrubs common in Australia."

In 1914 Stirling was appointed Honorary Curator for Ethnology, a position he retained until his death five years later. During the same year Edgar Ravenswood Waite became Director.

Waite, like Mawson, was of Yorkshire parentage; he was born in Leeds in May, 1866. Early in life he evinced a keen interest in the natural sciences and received a grounding in biology by taking a course at the Victoria University, now the University of Manchester. At the age of 22 he was appointed sub-curator of the Leeds Museum and three years later became curator. He was interested then mostly in ornithology,

but familiarized himself with the organization of museums in Britain and also Continental ones, including those at Berlin, Dresden, Prague, Brussels, Antwerp, Rotterdam, Leyden and Amsterdam. He became Assistant in Zoology at the Australian Museum in Sydney and there studied and reported on mammals and reptiles, but paying particular attention to fishes. In 1906 he succeeded Captain Hutton as curator of the Canterbury Museum in Christchurch, New Zealand, leaving that institution to take up the Directorship of the South Australian Museum, where he commenced duty during April, 1914.

At this time the writer had gathered a small private marine zoological collection and had hoped to find a place on the staff of the Museum, in which much of his spare time was spent; there had seemed little chance of this and he was being trained in accountancy. One Sunday in March he saw Waite (not yet in office) speaking with Noake, then Senior Attendant. Little did the writer dream that within a few weeks he would begin with Waite a daily contact for more than 13 years, interrupted only by absences from Adelaide of one or the other. Immediately after his appointment Waite asked for a cadet to function as his "personal assistant," to use his own words. Application was made by the writer but Waite was hesitant, having visualised a younger lad for the position and one moreover who was not on the threshold of a career completely dissociated, apparently, from museum activities. The writer while still at college had previously attended the university "extension lectures" of Professor Walter Howchin, who now expressed the opinion that if the applicant were willing to take the position at a cadet's salary he should be given a chance. It is to Howchin and Waite that he is grateful for the opportunity of a lifetime full of interest and association with kindred spirits both within the institution and in the field.

Waite realized immediately the significance of the work of the honorary curators then in office. In his first report to the Board he wrote "When the area of the Museum and the extent of the collections are taken into account, one cannot but be impressed with the smallness of the permanent, scientific staff, comprising, as it does, only two members, an ornithologist and an entomologist, in addition to the Director. It becomes, therefore, apparent how much the Board owes to the Hon. Curators, who represent respectively the subjects of Ethnology, Mollusca, Crustacea and Mineralogy. It cannot, however, be expected that the Hon. Curators can do much more than direct the department under their charge, and the permanent staff is at present too small to afford much help in this direction. Dr. Verco has, however, engaged assistance at his own expense; and Dr. Stirling is devoting almost every afternoon to his department, services which cannot be too highly appreciated."

The Board, Lands and Buildings

Robert Kay died in 1904 after 45 years service, first as Secretary, and later as General Director, Secretary and Treasurer. For a time the Public Librarian, Joseph Robert George Adams, occupied the dual position of Librarian and Secretary but later became "General Secretary."

An Act cited as *The Public Library, Museum, and Art Gallery, and Institutes Act, 1909,* was passed in December of that year, "to consolidate and amend the Laws as to Public Library, Museum, and Art Gallery, the Adelaide Circulating Library and Institutes; to incorporate and regulate the Institutes Association of South Australia" etc. The Board of Governors constituted by the 1883-4 Act continued as the Board under the new Act.

It quickly became obvious that the rapidly growing collections would overflow the additional space made available by the north wing. Within eighteen months of the opening of this wing, Stirling reported; "the plain fact is that in spite of the greatly increased accommodation afforded by the new building we are still cramped for space." As noted earlier, almost annually he stressed the difficulties in finding exhibition and storage space, submitting a particularly long report on the matter in 1904.

The Government, under Premier the Hon. Thomas Price, agreed eventually to erect the eastern wing of the original plan, but with considerable modifications.

Price died not long after this decision was made; as Minister of Education he had displayed a keen interest in the institution and particularly in the provision of the further wing.

It was decided that the proposed new building must be of stone to match the west wing but that it be wider than the last-named and consist of four floors, including a basement. A tender of £36,000 for its erection was accepted during the financial year 1907-8, and operations were commenced on May 4, 1908, under the supervision of the Superintendent of Public Buildings; the ultimate cost of the building was £48,200. The foundation stone was laid by his Excellency the Governor, Sir George Le Hunte, on October 30 of the same year, in the presence of a large gathering of Adelaide citizens. In contemporary photographs Stirling is naturally a prominent figure in the proceedings.

When a couple of years later the framework of the structure was nearing completion, the Board decided to set aside about two-thirds of the additional space to form an Australian section of the Museum. It soon became possible to commence removal to the new building of cases, specimens and a mass of material for years stored in the crypt and other portions of the west wing, which with the exception of two rooms utilized

for conchology and palaeontology now housed only the Public Library. This proceeding, together with the mounting and installation of new material was being carried on when the eastern wing was opened to the public in 1915.

An adjunct very necessary in our climate was erected at this time —a gas-tight shed (or large disinfecting chamber) in which is fumigated all material suspected of infestation with the insect larvae which can ruin furred and feathered specimens. So dangerous to the welfare of skins are larvae of the beetles *Dermestes* and *Anthrenus*, the clothes moth and silverfish, that neglect of constant inspection and regular fumigation within the exhibition cases may lead to rapid destruction of mounted animals worth thousands of pounds; supervision is necessarily even more rigid in the case of cabinet and stored material, owing to the fact that it may be out of sight for long periods. During the transfer to the new wing some specimens were unavoidably unprotected by cases for a time; therefore they were fumigated as a precautionary measure.

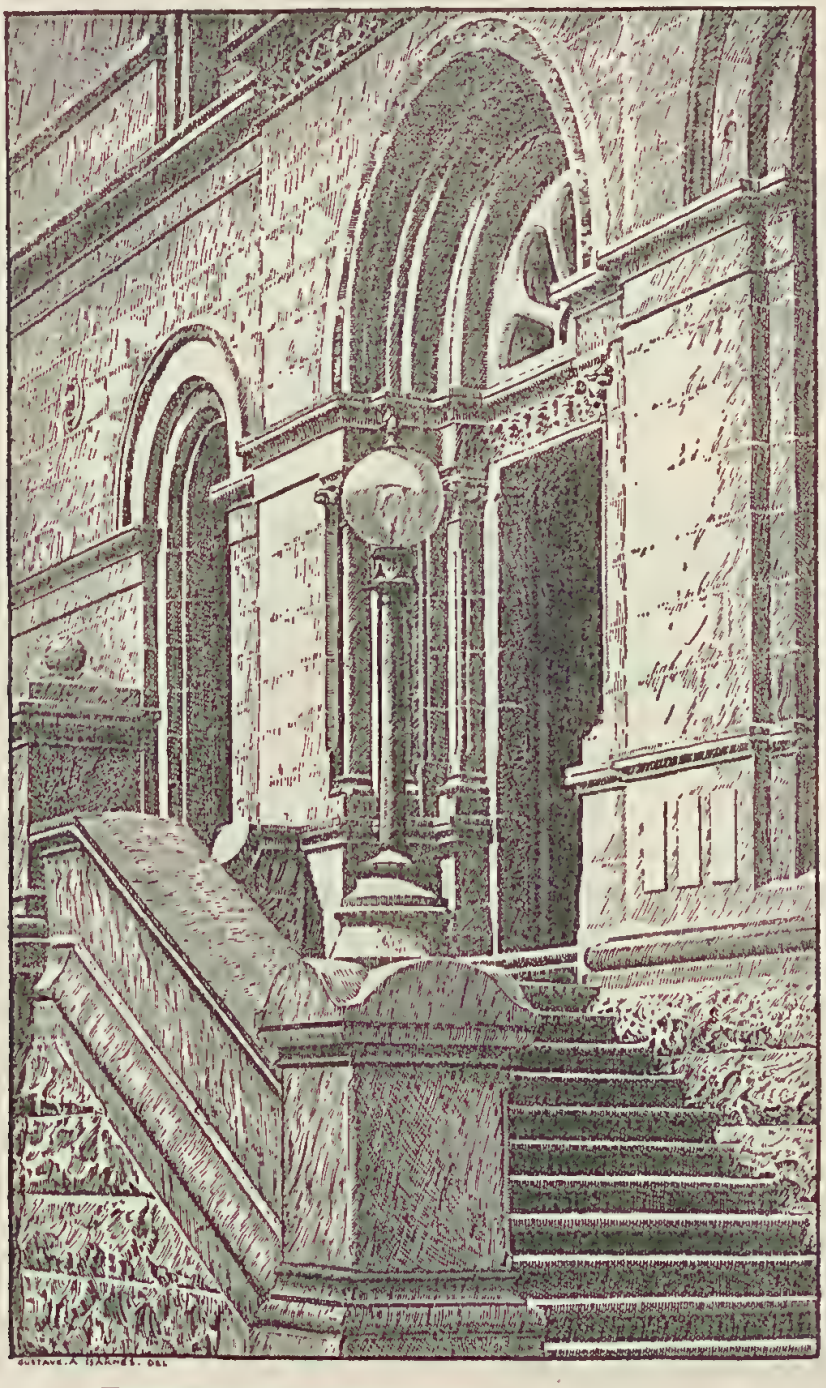
While the east wing was being built, a commodious shed, with a large loft, was added to the small macerating house, the old retort house built in 1861. The floors of the whole assembly were waterproofed and drained so that thenceforth the taxidermists had much more sanitary conditions under which to work.

In 1902 the land placed by proclamation under the care and control of the Board extended from Kintore Avenue to the western boundary of the University, and from North Terrace to a private road immediately at the rear of the buildings. Towards the close of this phase of its activities the Board, stimulated by the importunities of the heads of the respective departments under their care, and in view of past experience, were seized with the importance of having further grounds reserved for expansion. Members waited upon the then Minister of Education, urging the need for extensions and suggesting that some of the land to the north of the Library, Museum and Art Gallery and occupied by the Destitute Asylum, as well as the Military and Police Departments, be set aside for this purpose—this in view of the fact that accommodation elsewhere for the aforementioned institutions was being considered.

The East Wing

When Waite arrived in Adelaide on March 1, 1914, he found the new wing fully provided with exhibition cases and so had "no option but to adopt the general policy already laid down". He was disappointed with the general unsuitability of the building for museum purposes and in his first annual report said so: "I regret to find that, to a considerable extent the requirements of the Museum have been made subservient to the archi-

tectural features, the new building having to conform in general design to that of the Public Library". One may refer back to Professor Ralph



Entrance to eastern wing of Museum, 1915

Tate's remarks in 1878 (see page 36 herein). Waite further expressed an adverse opinion regarding the exhibition galleries:

As built, the space for the Australian section is none too large to accommodate the demands which will be made upon it; but nearly half the space of the two lower galleries has been allotted for art purposes. The space available for certain Museum groups is quite inadequate. For

example, respecting the snakes, which are of great interest, and a knowledge of them of considerable importance, one cannot do more than simply exhibit about half of the Australian species, to say nothing of the need for descriptive labels, maps illustrating local distribution, diagrams, models of anatomical features, instructions for treatment of snake-bite, etc. The space for the exhibition of fishes and other important and economic groups is similarly inadequate.

When the question of policy concerning the Morgan Thomas Bequest was being discussed in 1903 Stirling proposed that part of the capital be devoted to building a new Museum, but this did not appeal to his Board. In a report to the latter is a comment of interest, indicating that Stirling (who, it will be recalled, had visited overseas museums two years before) then considered the north wing imperfectly designed for Museum purposes:

> Undoubtedly from the point of view of the Museum, the most desirable and satisfactory arrangement would be that there should be an absolutely new and self-contained-establishment, comprising, at least, twice the floor-space of the present building, and including all the necessary appurtances, such as work and store rooms, offices etc.
>
> This proposal is suggested because it is possible that the present Museum building, which is, moreover, not wholly suitable for its purposes, may be required for the future expansion of the Library or Art Department.

The Board of Governors was proud of this new east wing, which architecturally was a decided contribution to the city of Adelaide. The administrative group of offices at the southern, and entrance, end of the first floor included a large Board Room which with due formality was opened by the then British Ambassador in Washington, the Rt. Honourable J. Brice, P.C., D.C.L., LL.D., in 1912.

In 1914 the east wing was occupied only in part, although the greater part, by the Museum. Most of the basement and the various rooms at the northern ends of all floors were handed over for Museum storage and work rooms. The northern two-thirds of the top floor was reserved for display of Australian ethnology, but the front portions of the exhibition galleries on the first and second floors had been appropriated for use by the Art Gallery, while an historical section and the coin collection, which had come under control of the Art Gallery, were to occupy the front halls of the second and third floors.

The installation of natural history material proceeded so rapidly, however, that before the building was opened to the public the Board was forced to face the fact that the space allotted was far from sufficient. Accordingly, the southern half of the ground floor, which formerly was intended for display of ceramic ware, was used for zoological exhibits.

The pressure of those interested in the Museum at that time must have been considerable, for the Board was reluctant to reverse its decision and expressed regret that it necessitated indefinite suspension of an Arts and Crafts department which had been projected. It also curtailed the space available for exhibition of prints, engravings and black and whites, but for 21 years these last were displayed in the southern half of the second exhibition floor, the remainder being devoted to bird groups and reptiles.

A special effort had been made to complete as many as possible of the group cases of Australian birds and mammals before the British Association for the Advancement of Science visited Australia, for the first time in the history of that influential body, in 1914. Adelaide was the first Australian city many of the delegates had seen and "considerable surprise was manifested that a comparatively new country should possess such an up-to-date Museum".

In one important respect the east wing was "up-to-date" in that it now possessed a goods lift to serve the four floors. A well was left for a passenger elevator but this remains empty; it has been utilised on the ground floor as an enquiry office and now is closed in with plate glass to form an exhibition case. The goods lift when first installed had no control other than that inside the cabin, so that if it happened to be at the top floor an officer with a load in the basement had to make his way up four flights of stairs in order to bring the lift down; a few years later this defect was remedied.

Following the outbreak of the First World War the Board became impressed with the necessity for husbanding its funds and instructions were given to cancel all outstanding large commitments, while heads of departments were asked to avoid any expenditure not urgent in character. A special grant of the modest sum of £515 had been applied for to cover expenses connected with the preparations for opening the new wing but this, understandably in the circumstances, had been refused.

The Museum, like other public institutions in Australia, suffered during the course of the European War. All purchases of working materials excepting where essential for continuance of exhibits in the new wing were discontinued, and rigid economy was enforced in every possible direction. Although progress on the exhibition galleries was impeded, the necessity for attention to the large collections which had now accumulated kept the small staff fully occupied.

4

Expansion 1915 - 1928

Mainly Exhibition

The eastern wing, now known as the "Australian Court", was formally opened on December 8, 1915, by His Excellency the Governor, Sir Henry Galway, who during his whole term of office displayed a keen interest in the institution. Waite later named a fish—*Mugilogobius galwayi*—after him, but unfortunately the name afterwards suffered the ignominy of becoming a synonym.

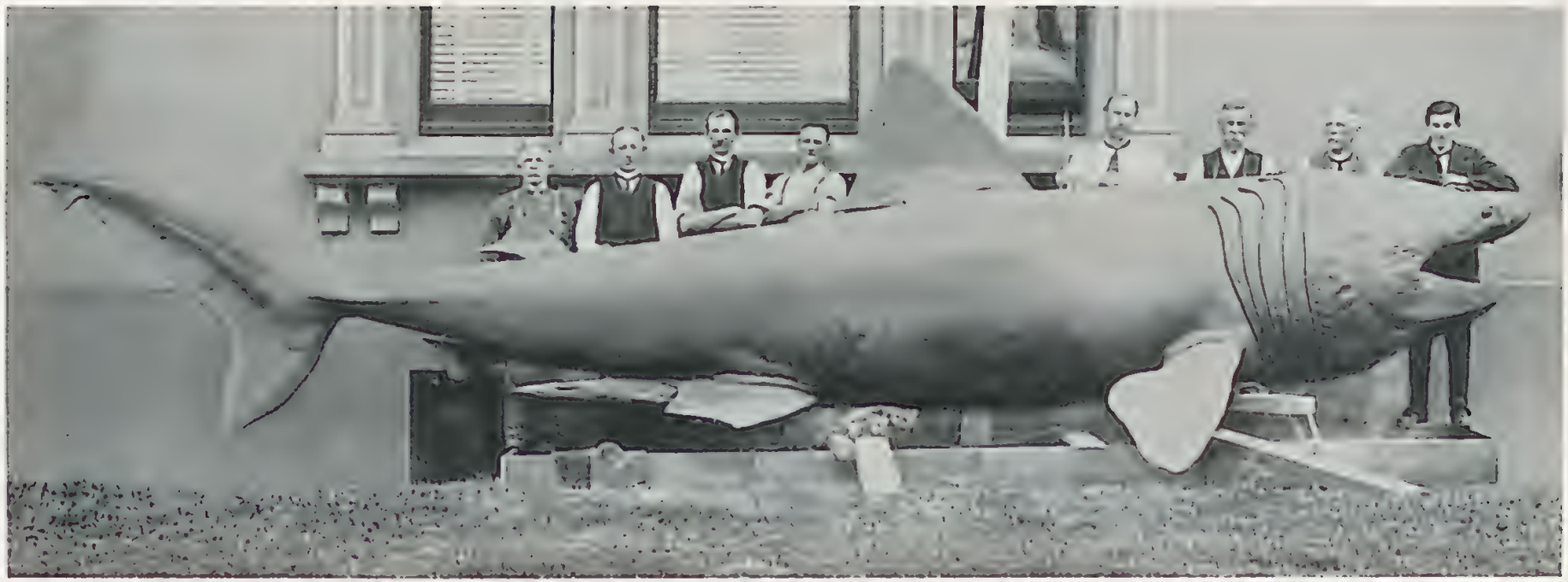
Exhibition space on the galleries was now almost trebled and for the first time in the history of the Museum it was possible, for a while, to segregate the Australian material from the extra-Australian or so-called "general collections".

It is not surprising that Waite's interest in fishes was soon reflected in the galleries. With the co-operation of many donors, notably A. E. Waterman of Daw's Fish Market, freshly caught South Australian fishes made their way to the Museum and were there moulded and cast in plaster by Robert Limb, an outstanding expert with this medium; the casts were coloured from sketches made immediately on receipt of the specimens, the painting being carried out in part by Waite himself but mainly by Gustave A. Barnes. One of Waite's biggest thrills was the acquisition of a Basking Shark, 25 feet in length, which was killed at Fowlers Bay by L. Laurenti and others. Directly Waite was notified of the capture of this huge fish, he arranged for it to be placed on the deck of a vessel bound for Port Adelaide, whence it came to the Museum on a lorry. All hands were requisitioned and under the guidance of Limb it was moulded and cast. When coloured it was displayed on the wall near the main entrance of the new wing and was one of the most conspicuous exhibits when this was opened.

The accompanying photograph shows the cast, one of the largest ever made of fishes, on its way to the place where it has hung for more than 40 years. Before the moulding was completed and the carcass removed effluvia from the shark became a most objectionable constituent of the Adelaide atmosphere and numerous complaints were received. The operation was carried out in the macerating house, which as aforementioned is situated behind the old Institute Building, is quite close to the Public Library, and adjacent to North Terrace, not far from the heart of the city.

The name of this widely distributed marine giant is said to have originated because of its habit of resting at the surface of the sea. It grows to a length of about 40 feet and is rivalled in size only by its cousin the Whale Shark (not found in Australian waters) and the dangerous White Pointer. Unlike the last-named, the Basking Shark feeds only upon the small floating life occurring at or near the surface, obtaining its food by a method similar to that of the Whalebone Whales. The gill-slits, as will be noticed in the illustration, are much longer than in all sharks excepting the aforementioned Whale Shark. As a substitute for the baleen of the Whalebone Whales, its gill-rakers (which in most fishes consist of relatively small projections on the back of the arches which support the gills), are greatly elongated and collectively function as a sieve for straining out the small creatures from water entering the mouth and flowing out of the gill-openings. The two and a half thousand teeth of the Basking Shark are small and the fish is inoffensive insofar as man and other large creatures are concerned. As Waite has remarked, "it is too big to have many enemies, and feeding upon small pelagic organisms instead of swiftly swimming fishes, it requires neither speed, nor teeth adapted for seizure". In the northern hemisphere the Basking Shark formerly was hunted for the oil contained in the large liver. Its capture presented difficulties, for sometimes when harpooned it dived to the bottom, from whence, unlike the air-breathing whales, it was not compelled to come soon to the surface.

An innovation in 1915 was the installation of small aquaria in the windows. These were maintained for about 15 years but proved a constant expense and trouble because of the too bright lighting, resulting in "green water" and the deaths of the small fishes in summer owing to excessive heating of the aquaria. Waite, an enthusiastic aquarist, endeavoured to induce the Zoological Society's Council, of which he was soon a member to establish an Aquarium at the Adelaide Zoological Gardens but for various reasons, mainly financial, the project was not adopted. Waite and the writer, respectively President and Secretary of the South Australian Aquarium Society, were instrumental in installing an exhibit at the *All-Australian Peace Exhibition*, held in Adelaide in 1920, following the



Cast of Basking Shark (*Cetorhinus maximus*), 1914

Left to right: J. Frost (Gardener), F. R. Zietz, J. Conroy, R. Limb, E. R. Waite, J. and O. Rau, H. M. Hale

First World War; apparatus and aquaria were lent by the Museum. Though lighted solely by electricity the fishes, over a period of two months, throve much better than in the Museum, no confervae grew on the glass and the water remained crystal clear.

As Honorary Curator for Ethnology, Stirling's spare time had been occupied entirely in the arrangement of the Australian aboriginal collections on the top floor of the new Court and at the opening of the wing about half of the task was completed. In this work he was assisted by John Conroy, (formerly attendant only but now "Ethnologist's Assistant" as well) who showed considerable aptitude in handling and repairing when necessary the multitudinous objects.

As collections long in storage once more saw the light of day Stirling himself was impressed with their magnitude. He was happy because for the first time in his long connection with the Museum there was an opportunity for arranging a satisfactory display; in 1915 he reported to the Board:

> This work has involved the unpacking of many boxes of specimens that have been sealed up for, in some cases, as long as 10 years. I can say very confidently that when all the material in the Museum is set out —or rather I should say, when as much of it as possible is set out, for there will be no room for display of all of it—it will form a collection that, within its limits, will be unsurpassed. It can now be seen how advantageous have been the various purchases of large collections that have been made from time to time during the past 20 years, for these comprise articles which will, as regards certain districts at least, never be collected again.

Within a year of this report the exhibition cases on the ethnological gallery were filled. in fact they were so crammed that really effective display had been impossible. Moreover almost all of the specimens acquired by the Museum during the preceding ten to fifteen years had to be packed away in boxes, leaving unrepresented several important sections.

In 1917 the honour of Knight Bachelor was bestowed upon Stirling in recognition of his long continued services to science.

A large number of the original George French Angas water colours were now transferred from the National Art Gallery in South Australia to the Museum; the pictures depict the way of life and physical appearance of natives of New Zealand, South Australia and South Africa in the first half of the 19th century. Almost one-half of the sketches are still unpublished and because of their early date represent a rich storehouse of knowledge of the culture of the three areas. Some represent the originals of many of the pictures reproduced in *South Australia Illustrated*, 1847.

G. French Angas carefully preserved the originals of his water colours and many of them were distributed by him amongst his relatives and friends. In 1902, fifteen years before the sketches mentioned above were handed over to the Museum, they and others were bequeathed to the Board of Governors of the Public Library, Museum and Art Gallery of South Australia by James Angas Johnson. At that time at least four representative collections of the Angas water colours were known to exist One was owned by Mrs. Evans of Evandale, another by Dr George Lindsay Johnson of London, and a similar one by the proprietors of the York Gate Library, also then in London but now in possession of the South Australian branch of the Royal Geographical Society of Australasia; the fourth and most valuable was that bequeathed by James A. Johnson.

Stirling exhibited a series of the original water colours, framed and fastened to stands, but 20 years later they were found to be fading slightly under the influence of the heat and strong light of the upper gallery; they were removed therefore to safer storage in a darkened place.

Stirling had planned to display enlarged photographs illustrating the physical appearance and customs of Papuans; many such pictures were presented by Sir George Le Hunte when he was Governor of South Australia. Further, the F. J. Gillen negatives had been purchased with a view to preparing enlargements for illustrative purposes, but this idea of necessity was abandoned also because of inadequate exhibition space.

The conditions laid down by Cabinet when the Gillen negatives and lantern slides were purchased by the Government are of interest. They were placed in the joint custody of the Minister of Education and the President of the Board and no print or reproduction was to be allowed without the consent of both custodians, each of whom was to be supplied with an album containing one print of each negative. It was stated that "As many of these negatives were used for the illustrations in the works published by Mr. Gillen and Professor Spencer they have special value apart from that which they possess as being representations of ceremonies and natives which it is no longer possible to procure".

As a matter of fact in the thirties of the present century further photographs of the Aranda natives were secured during the course of expeditions, but these aboriginals were by this time detribalised. Neighbouring tribes of the Western MacDonnell Ranges, the *Jumu*, *Ngalia* and *Pintubi* were then scarcely or not at all affected by European contacts and a large number of photographs and many thousands of feet of 16 mm. cinema film of these primitive people are now available.

On March 20, 1919, Sir Edward Stirling died, and thus the Museum lost a firm supporter. His association had been continuous since the year 1881; he was Chairman of the South Australian Institute Board

in 1882. He remained a member of the larger Board of the Public Library, Museum and Art Gallery until 1894. From 1889 onwards he held the position of Honorary Director for five and a half years, and it will be recalled he was Director for about 17 years. Since Waite's appointment he had continued his work on Australian and Pacific ethnography. His beloved collections had by this time overflowed into the north wing and on to the lower exhibition gallery of the Australian Court, where amongst other material about 800 aboriginal skulls grinned at the public from the wall cases near the front entrance. In all, Stirling had placed on exhibition over 10,000 anthropological specimens.

It was decided that the top gallery of the Australian Court, where Stirling had laboured so long, should be known permanently as *The Stirling Gallery*. To the northern annexe of this (previously Stirling's large work room) the Australian ethnologia from the north wing was removed in 1924. The Pacific Islands collections for which there was space remained in the north wing and were added to until they occupied the wall cases on all sides of the upper floor.

F. R. Zietz, in addition to his ornithological responsibilities, was now assigned to the task of registration of ethnological material and in three years he had completed the list of all exhibited specimens.

By 1919 all space on the three exhibition floors of the Australian Court were more than comfortably filled. On the ground floor typical Australian mammals were displayed in group cases, some with painted background, but not constituting "dioramas". The original remains of *Diprotodon*, and its replica of the whole skeleton, formed a prominent feature. Waite had begun to install a considerable number of casts of fishes.

On the northern half of the first floor (second exhibition gallery) the birds were then all arranged in "group" cases like the mammals, that is to say all South Australian sea-birds were assembled in one case, with appropriate surroundings, water-birds in another and so on. An installation which has attracted much attention always is the section of a Mallee Hen's Nest, showing the incubating eggs and a chick making its way to the surface, where stand the parents.

The galleries of the top floor contained all of the Australian ethnological material that it was capable of holding and also two large group cases with painted backgrounds, one displaying the aboriginal life at Emily Gap in Central Australia, the other a scene on the River Murray, a modification of the diorama originally installed by Stirling in the west wing; both cases exhibit the life-sized figures of natives previously mentioned.

A local repercussion of the European War was an invasion of South Australia by the Black Rat, a year or so after the beginning of hostili-

ties. It is understood that under the stress and turmoil of these times the protective metal cones, to prevent migration ashore of rodents, were not always placed on the hawsers between ship and wharf. Waite commented:

> The western areas of the metropolitan districts witnessed an influx of these strangers hardly known here before the outbreak of war; the attention drawn to them by an article in *The Register* was the means of discovering that they were first observed in the neighbourhood of Port Adelaide, whence they rapidly spread eastward. Young ones bred in the city were exhibited alive and attracted much attention. From enquiries made, I have every reason to believe that the rats arrived, possibly from Egypt, in the troop transport vessels.

These young rats, with their prominent glossy black eyes, and long tails and ears, were handsome little creatures and were much admired in the Museum. In fact some visitors asked where they might obtain specimens to keep as pets.

The Black Rat or Old English Black Rat *(Rattus rattus)* is still with us, but its subspecies, the Ship Rat or Tree Rat *(Rattus rattus alexandrinus)*, nowadays usually referred to in South Australia as the Fruit Rat, apparently came to Australia very much earlier and is responsible for a great deal of destruction. Professor J. Burton Cleland, an old and valued friend and associate of the South Australian Museum, has collected details of the hordes which appear at times and sweep in plague proportions across parts of the country. It appears that the first record of such plagues occurred in the River Darling areas in 1864, and since then incredible hordes have caused havoc at various periods in different parts of Australia. On such occasions the rats devour everything edible they come across. D. N. George, once a pastoralist at Goyder's Lagoon Station, informed the writer that during one such plague a claypan full of water on his station contained thousands of Shield Shrimps (*Triops australiensis)* a transient crustacean whose eggs are viable after long desiccation. As the rats swept over his property he observed them dragging the shrimps, which are an inch or two in length, from the edge of the water and greedily devouring them.

Some activities associated with the war effort were carried out by the Museum staff, although they were by no means as specialised as those demanded by the Second World War of 1939-45. Skeletal material was supplied for Red Cross training, while mounted animals, chiefly kangaroos, were removed from their cases, and placed at the disposal of patriotic committees, the All British League, Naval authorities and others, for use in pageants and special exhibitions. The most ambitious undertaking following the war was the making of a relief map, 20 feet or so in length, of the tragic Gallipoli Peninsula. This was modelled in

clay by Gustave Adrian Barnes and cast in plaster by Robert Limb. A smaller Gallipoli relief map, prepared by the same officers, had been presented by the Board to the Minister of Defence some time before, and was so admired that request was made for the larger model.

Barnes, a charming personality, played a part in the affairs of the Museum for a while, painting backgrounds of the group cases and, as already mentioned, colouring a great many casts. He was at this time Artist and Art Supervisor in the Art Gallery but his work was divided between duties connected with the last-named and the Museum. He became Curator of the Art Gallery in 1918, when he visited Kangaroo Island with Waite and the formator, Robert Limb. There he assisted Limb with a mould taken from "The Frenchman's Rock"; this was later reproduced in cement and replaced the fretting original, which is now housed in the National Gallery. On this occasion he made studies in colour of living fishes which Limb then moulded, afterwards reproducing them as plaster casts.

It was in 1916 that an arrangement was made with the South Australian School of Arts and Crafts to conduct a class at the Museum once weekly, and this practice has continued for 40 years.

Barnes designed a Roll of Honour to commemorate the war services of those of the staff who had enlisted and, following the death of Sir Edward Stirling, designed and modelled the "Stirling Memorial Tablet" exhibited in the Museum. Barnes died at an early age on March 14, 1921.

Amongst the many famous people who have visited the South Australian Museum is Sir Arthur Conan Doyle who inspected the exhibition galleries in September, 1920. In the press he paid a tribute to Waite. "No account of my day could be complete which did not acknowledge the company and teaching of Mr. E. R. Waite . . . . who placed his stores of knowledge at my disposal".

Sir Arthur seemed particularly interested in some of the larger Echinoderms, those popularly known as "Sea-eggs", and asked a number of questions regarding their structure. It was intriguing to read, nine years later, his short fiction story *When the World Screamed.*

Because of his subantarctic cruises, Waite was greatly interested in the fauna of the cold southern seas and in 1921 he arranged for the installation of an Antarctic case, which stands at the western end of the north wing; it occupies in fact the site where the entomological collection stood between 1895 and 1918.

Waite designed and painted the greater part of this case; the scene is set near Cape Royds and shows the famous Mount Erebus in eruption, largely obscured by a snowstorm. Antarctic mammals and birds are dis-

played, including a Sea Leopard and a Weddell Seal which had come ashore near Victor Harbour on the South Australian coast, far from their natural haunts.

Mawson in 1914 had presented 49 skins of Antarctic birds secured during his Australasian Antarctic Expedition and some of these were now mounted for exhibition in the case. Originally two notable dogs were displayed here also; one, a Siberian animal named *Serai* had belonged to the ill-fated British Antarctic Expedition of 1910 organized by Captain Robert F. Scott. *Serai* was given to Waite after the expedition, remaining one of his most treasured possessions until it died of old age. The second dog, *Ross*, was one of the aforementioned Greenland sledging dogs secured by Mawson for his Australasian Antarctic Expedition and the leader had retained this particular animal for sentimental reasons.

These two dogs, like many of the other mounts in the Museum reflect the skill of the Rau brothers as Taxidermists; with a sledge used by Mawson, they are now exhibited as a separate group in view of their historic interest.

Apart from *Serai* Waite kept a number of pets in his garden, mostly aquatic creatures and birds. Amongst the latter were some galahs *(Kakatoe roseicapilla)* secured during an expedition to Strzelecki and Cooper Creeks in 1916, in company with Captain S. A. White. When the writer visited Waite's house, which was often, one of the Galahs, a credulous cockatoo, greeted him with a subdued shout—"Hallo Captain White".

During the 1920's the American Museum of Natural History was seeking co-operation for the preparation of an Australian Court as part of its public display, A cast of the *Diprotodon* skeleton was purchased by this institution, and Waite sent also some of our fossils, a number of reptiles and other zoological material, with a view to receiving exchanges. The United States Museum sent in return some good exhibits, including casts of parts of the great American Dinosaurs as well as life casts of a North American Sioux Indian Chief and his squaw, accompanied by various other objects including a sling, a saddle, and a pipe. The figures are furnished with natural hair and are clothed with garments of bison skin made about 1875. The remarks of two small boys viewing these figures soon after they were exhibited is a tribute to their excellence. With awe-struck face one said to the other "They caught them and killed them and stuffed them".

For many years the exhibition galleries had been closed to the public for one day each week in order to facilitate cleaning. In 1927 it was decided to close for two mornings and to admit the public on the afternoons of the days concerned. This resulted in an immediate increase in attendances of approximately 6,000 and in 1928 the total number of

"SERAI" AND "ROSS"
Dogs used by Scott, 1910, and Mawson, 1911-1912; mounted and exhibited in South Australian Museum

visitors was 100,840. With increased attendant staff the practice of closing for cleaning was finally abandoned altogether.

Field Work

Very little organized collecting was possible during the war. In September 1915, however, the Minister of Agriculture invited Waite to accompany an experimental trawling cruise to the Great Australian Bight, where Dannevig in the Federal Trawler *Endeavour* had mapped out promising trawling grounds a few years before. The trawler *Simplon* was chartered for this venture, which occupied about two weeks. Although the expedition could scarcely be regarded as a commercial success, a good series of fishes was secured for the Museum, as well as other marine specimens, some of which were previously unknown and others new to the collection.

Waite was usually a good sailor, but not always. One remembers a happening on another collecting trip. Rough weather and Waite—as well as others—suffering as a consequence. Aboard was Archibald Watson, Professor of Anatomy at the University of Adelaide and perhaps the most extraordinary personage who has ever held a Chair at the University. At the height of our discomfort Watson appeared from below with a large tin of sardines and a tumbler of whisky—neat. He ate the fish, drank the olive oil in which they were preserved, followed it with the spirits and remarked "If you had a meal like Christians you wouldn't feel ill"—and *he* wasn't.

Probably because of his friendship with Waite, Watson continued an interest in fishes long after his retirement from the University and invented, or modified, fishing apparatus for the capture of members of the large mackerel family from the various ships on which he travelled, ostensibly as ship's doctor.

Lea proceeded to give further eveidence of his amazing vitality. Professor W. M. Wheeler, a specialist in the study of ants, agreed to report upon the Australian species. In 1915 Lea undertook special trips within 20 miles of Adelaide and collected 20,000 specimens for Wheeler; not only this, but he prepared a plate of drawings to illustrate some of the species taken. During November of the same year he left on a visit of three months duration to Lord Howe and Norfolk Islands, collecting insects and other invertebrates, securing 19,163 specimens! In addition numerous vertebrates, mostly fishes, were taken by him there. Within four months of his return to Adelaide some of his collections were displayed on the galleries and Lea had a paper on others ready for publication and more in course of preparation.

Brief mention has been made of the fact that, in company with Captain White, the well-known ornithologist of "Reedbeds", Waite led an expedition to the north-eastern areas of South Australia. S. A. White was the son of Samuel White, founder of the old home at Reedbeds and already mentioned as a donor of birds. The party, which left Adelaide in September, 1916, included O. Rau as taxidermist and collector, a cook, an Afghan camel driver in charge of nine bull camels and an aboriginal who knew the country.

The route of the expedition traversed a long loop commencing at Farina, passing Mounts Lyndhurst and Hopeless, crossing between Lake Callabonna and Lake Blanche, thence following the Strzelecki Creek to Innamincka. From the last-named the party turned west, meandering across the Cooper Creek country to Kanowana and Killadeina, then turned south to Kopperamanna and finally joined the rail again at Marree. Few aboriginals were met with and those contacted were so well supplied with Government rations of food and tobacco from the stations that they were not inclined to assist in collecting natural history material. Waite noted that the mortality amongst the station natives seemed very high and that children were few.

The years 1913-15 had covered a drought period and it had been hoped that, copious rains having fallen on this low rainfall country in 1916, animal life in mid-summer would be abundant. Although results were not quite up to expectations, good collections were taken, including previously undescribed insects and crustaceans; 106 species of birds were secured and the nest and eggs of the Desert Chat *(Ashbyia lovensis)* were seen for the first time. The reptiles are of exceptional interest in that some of them, typically Queensland forms, have not been taken since in South Australia.

Waite obtained a fresh-water perch, which he described as new, close to the tree on the bank of the Cooper under which Burke (Burke and Wills Expedition, 1860-1861) was buried. One of Waite's old friends in Sydney, Edwin Welch, was a member of Howitt's search party. Because of this association Waite named the fish Welch's Perch *(Therapon welchi)*. The results of this Museum expedition occupies 255 pages, 23 plates and a few text figures in the *Transactions of the Royal Society of South Australia;* nine papers dealing with the zoological material were included.

The stomachs of the birds taken by Waite and White were preserved and handed to Lea for report on their contents. In company with Captain White, Lea now made a trip to Ooldea on the east-west railway and more insects and birds—with their stomachs—were collected. Before the middle of 1917, Lea had completed examination of the contents of over 1,000 stomachs, sorted the various seeds, insects, etc., had sent to special-

ists species with which he was not familiar, and had a paper on the total results almost ready for publication. This investigation of stomach contents continued until Lea's death; a notable contribution was the demonstration of the usefulness of owls in assisting to control introduced pests, mainly rodents and birds.

The Board continued to support its policy of encouraging expeditions by members of the staff and thereby considerable and valuable additions were made to the collections. At this time money had a far greater purchasing value than it has today and because of the Morgan Thomas Bequest the Museum was in a better position than similar Australian institutions, despite cuts in the Government grants. Waite and Lea, both active field workers, made profitable expeditions during the decade following the cessation of the war, while N. B. Tindale and the writer carried out several expeditions to distant parts of Australia which were productive of gratifying collections.

Lea was soon off again, this time to western Tasmania (January to February 1918) and along the banks of the River Murray, where a record flood had washed down and stranded along its edges hundreds of thousands of insects, including beetles, a group in which he was a specialist of international reputation.

In Tasmania Lea was met by Herbert James Carter of Sydney and the two entomologists collected together at Cradle Mountain and along the west coast, securing much rare or unknown material, particularly in the smaller species. Lea examined in Tasmania the large beetle collection of Augustus Simson. This, together with portion of his library and notebooks, was purchased. Many of the exotic species in the Simson collection had been taken by Alfred Russell Wallace and by Henry W. Bates, and are therefore of special interest.

When in the field Lea lost no single opportunity of collecting his insects. During a train journey he jumped off whenever there was a stop; rushing to the nearest trees or bushes he held under them an open white umbrella, a famous appurtenance which he carried always when on excursions, and then vigorously lashed the foliage with a stick, dislodging insects large and small. Carrying the umbrella containing the resultant debris he made his way back to his railway carriage, immediately sorted his captures, put them in spirit bottles and labelled the contents. Unintelligent fellow travellers could not comprehend the reason for these antics and on one particular occasion apprehensive passengers phoned ahead, asking for an investigation, as they had grave doubts concerning his sanity.

John Clark, Entomologist at the Western Australian Museum during this period, collected and sent to the South Australian Museum numerous

insects and some crustaceans found living in the nests of ants and these commensals Lea found of special interest, as already he was studying the South Australian species.

It may be remarked that ants themselves are at times remarkably good collectors. A rare Western Australian water-bug *(Diaprepocoris personata)* described by the writer is known only from two examples; the type specimen was found by Clark in an ants' nest, having been dragged there by the industrious insects. Further, on the grass plains between Alice Springs and the Queensland border we have seen the aboriginal women gathering in bark dishes, for preparation of food cakes, the accumulation of tiny seeds around the burrows made by Central Australian ants.

The year 1918 was a momentous one. The all-important happening of course, was the armistice towards its close. For the Museum it marked a year of important activities and great acquisitions. The main items were:—

1 Purchase already mentioned of the Augustus Simson collection of Coleoptera in Tasmania.

2 Lea examined and recommended purchase of the Dr. Thomas P. Lucas collection of Lepidoptera in Brisbane.

3 Lea's researches on destruction of wheat.

4 Waite's expedition to the South-western Pacific.

5 Establishment of the *Records of the South Australian Museum,* referred to in detail later.

6 Purchase of the Keartland collection of birds' eggs in Melbourne.

7 The vacated Destitute Asylum at the rear of the institution was handed over for Museum use.

The third and fourth items were a direct result of the war, as also was the sending to the Museum of magnificent collections of beetles and butterflies from Aitape and Madang; these comprise about 5,000 selected and perfect specimens and form an important section of our Lepidoptera from the Pacific Islands.

During the war vast quantities of wheat had accumulated in Australia and by 1918 were being destroyed by weevils and other pests. Lea became a member of the Wheat Weevil Committee and ultimately devised three practical systems of treatment which resulted in the saving of grain worth at least £1,500,000. The weevil was recognised as a pest which dirty conditions encouraged. The chief problem of storage was to prevent contamination from without, and to secure relatively "gas tight" conditions to allow for efficient fumigation; this of-course was before the days of silos. The most successful measure for both pur-

poses, a simple one, was proposed by Lea—the use of malthoid sheds. His directions regarding means of preventing the spread of the trouble as well as his methods of removing breeding grounds in the vicinity of and under the stacks were also of value.

After returning from Tasmania in 1918 Lea visited many parts of South Australia, primarily to examine wheat stacks, and also made an extended tour of Victoria and New South Wales for the same purpose. He went to Brisbane to initiate proceedings for the acquisition of the Dr. Thomas P. Lucas collection of at least 80,000 butterflies and moths housed in 11 large cabinets. Subsequently these were purchased and came to the Museum in batches during the next four years. Lea considered that the Australian Lepidopteran collections thereby had been brought from third-rate to the front rank.

While Lea was thus occupied, Waite had undertaken an expedition which was to affect his health for the rest of his days.

After our occupation of German territory in the Pacific, small collections of ethnological objects were presented by returned soldiers and, as some of the objects were not represented previously in the Museum, its Committee more than once raised the question of sending someone possessed of the necessary qualifications to collect in the Islands on behalf of the Museum. In 1918 Waite was sent to New Guinea, New Ireland and New Britain; by arrangement he was accompanied by A. C. Davis, then lately Protector of Natives at New Ireland.

The little party left Sydney in May and spent nearly four months in the South-west Pacific Islands. After visiting New Britain the greater portion of this time was occupied in New Ireland, the Gardner and outlying islands. With the help of the Administrator, who arranged for relays of natives as assistants, Waite was able to secure large quantities of ethnological and zoological specimens, mostly new to the Museum. He was assisted by traders and planters, and made contact with Father Peekel, then engaged upon a study of the languages of the natives of New Ireland.

In addition to the specimens secured by Waite and Davis personally, several small collections and a large one, the Whiteman collection, were purchased. Others, as for instance ethnologia and bird skins gathered by Captain A. J. Hunter, were donated; the ornithological material supplied by Captain Hunter was specially welcome as it included Birds of Paradise. Waite's visit stimulated interest and after his return to Adelaide further Pacific Island material was presented.

Waite brought back with him collections which occupied six tons of shipping space. He suffered twice from malaria while engaged on the expedition, before which he turned the scale at 152 pounds but on return

barely 130. As previously noted his health was undermined and for the rest of his life he suffered recurrent attacks of malaria.

During the course of this expedition Waite twice almost lost his life. On one occasion when searching for bats in a cave two and a half miles from Lakwiafanga, in New Ireland, his native attendant dropped the light. Waite and the boy groped their way for the exit and had the greatest difficulty in discovering the entrance. During the search Waite fell into one of the many deep holes in the floor of the cave; he saved himself by having the presence of mind to spread his arms so as to span the opening. Simultaneously the native slid down another hole. After some trouble they got out, and eventually the cave entrance was reached. Waite and his companion arrived at the camp bedraggled and forlorn just as a search party organized by Davis was about to go out to find them.

On the second occasion Waite, in search of a native "gallows" for dressing human carcases, in possession of a known cannibal, went out with a party of three natives and a Belgian planter. When Waite, who was a long way ahead, approached the native village concerned, one of the inhabitants raised a spear and was about to throw it. Fortunately a police boy accompanying the party was soon close enough to shout a threat of retaliation and the spear was not cast.

G. A. Keartland of Melbourne (collecting naturalist attached to the Horn Expedition in 1894) was offering for sale in 1918 his collection of birds' eggs, together with a cabinet and a careful catalogue, all of which were purchased. The collection had been made over a period of about 25 years, many of the specimens having been taken in the earlier days, when they were obtainable more easily. Besides single eggs there were included 468 clutches; with this addition, eggs of more than two-thirds of the birds of Australia were now represented.

A matter for regret is that the Board was not in a position to purchase the magnificent bird collection of Gregory M. Mathews. In 1918 this was available for purchase in London and it was suggested that it should be bought for the South Australian Museum; it consisted of 20,000 skins and was valued at £10,000, of which H. L. White, a wealthy grazier of Scone, in New South Wales, offered to contribute £2,000. Abortive attempts to raise the rest of the necessary sum were made and eventually the Mathews collection was purchased by Lord Rothschild, who later sold it to the American Museum of Natural History in New York. American interest in Australian ornithology was aroused by the acquisition of this great collection, containing as it does so many type specimens.

Part of the then vacated Destitute Asylum at the rear of the Library and Museum was handed over for use of the Museum in 1918, although the land on which this and other old buildings stand was not then under

complete control of the Board. This was regarded as a veritable boon, as the Museum now had difficulty in finding adequate space for anything. Waite's South-west Pacific collections were stored there temporarily; a few months earlier the palaeontological material had been removed thence from a large room on the third floor of the east wing.

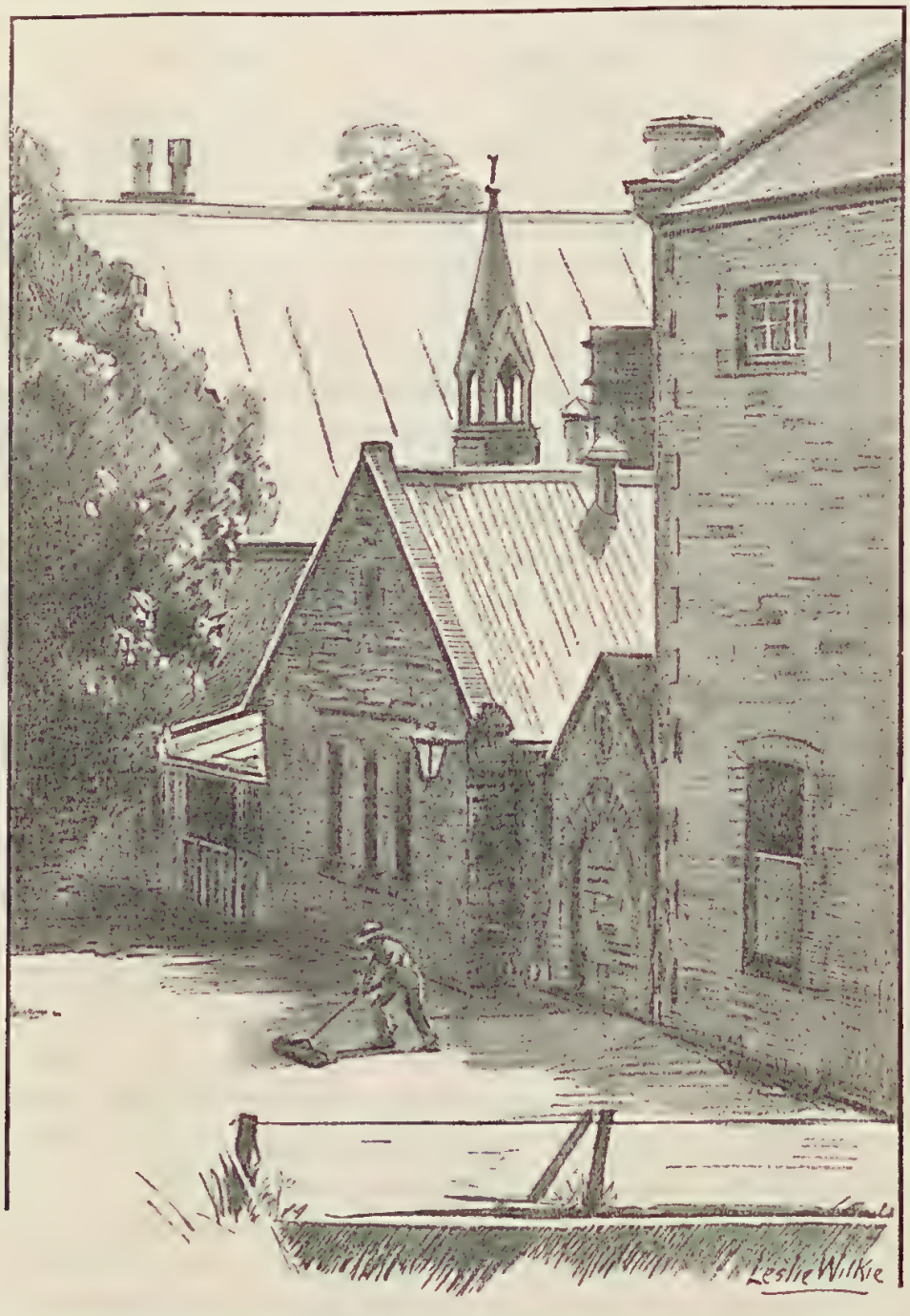
When the writer first made his acquaintance with the Museum, Tepper with the entomological collections was accommodated in an area partitioned off at the western end of the north wing; prior to 1918 Lea occupied these quarters. The insect cabinets and the Entomologist were now moved to the room formerly occupied by large fossils, mainly *Diprotodon*. Because of Lea's energy in collecting personally, his encouragement of amateur collectors, and his pressure for purchase of large insect collections, this room was jammed with cabinets at the time of his death and remained so until some reallocation of space was made possible in 1940, when the administrative offices at the front of the building became available for Museum purposes.

In September of 1918 a female Blue Whale *(Balaenoptera musculus)*, 87 feet 4 inches in length, became stranded at Corvisart Bay, on the west coast of our State; directly Waite heard of this he went to examine it, accompanied by his only son Claude. Waite, whose interest in the whales went back some years, was anxious that the skeleton should be secured but this venture, when accomplished, was not productive of very good results. A Marine Board tug was hired to drag the whale to a sheltered beach near Streaky Bay, 32 miles from the spot where it came ashore. By this time the animal had been dead for at least three weeks and decomposition was well advanced.

In the first place the carcass had been lying amongst fallen rocks beneath steep cliffs and constant buffeting on this rough coast resulted in much damage, disclosed when the bones were macerated. Then the head, already with the rostrum broken off, was dropped from the gantry when being lowered into its macerating tank, a cellar remaining where a building adjacent to the Destitute Asylum had been removed. When cleaned the skeleton lay for a time in the open and later was moved from place to place as storage exigencies became more acute until eventually its condition became such that mounting would be extremely difficult.

Waite had taken Robert Limb with him to supervise the work of men engaged for the purpose of securing this skeleton and also the whale oil, this last not being recommended by Waite. A horse was used to drag off the flensed blubber, which was rendered on the spot. The oil, however, naturally was very impure and stank to high heaven. It did not command a ready market and was stored at Port Adelaide. On one noteworthy occasion a long time afterwards, Limb was sent to obtain a

sample of the offensive oil for a prospective buyer. When he opened the first drum a burst of oil erupted and Limb was drenched from head



Buildings on Destitute Asylum grounds, erected in 1854 and now demolished. The Corvisart Bay whale skeleton was stored here temporarily while in the foreground is the tank in which it was macerated

to foot. So malodorous was he that he was forced to ride to Adelaide on the outside platform of one of the old railway carriages and then to walk to his home four miles away. The oil was finally disposed of in 1928.

Shortly after this giant cetacean came ashore two smaller whale skeletons were secured; one of these, Layard's Beaked Whale (*Mesoplodon layardii*), was stranded at Kingston and the other, a very young Blue Whale, was found on the shore at Port Wakefield.

In 1920, "Owing to financial conditions the desirable practice of sending Museum officers on collecting expeditions had to be curtailed." However, Norman Barnett Tindale, of the Museum staff, had now a proposition to put before the Board.

In 1916 Tindale had applied for a position at the Museum but as there was no vacancy he was engaged as a cadet in the Public Library. In 1918 Lea successfully applied for his transfer to the entomological section. Tindale's original love lay with the Lepidoptera and he has never lost interest, although events steered him to a growing interest in anthropology.

Tindale had been in communication with a Missionary Society desirous of establishing a station on Groote Eylandt, in the Gulf of Carpentaria, and had made tentative arrangements to accompany as naturalist the party to whom the task was allotted.

The "Great Island", the largest adjacent to the coast of Australia, had never been collected upon by a zoologist nor, since the time of Flinders, by any botanist. Tindale proposed to collect here and on adjacent islands, and asked for leave of absence for a year.

Tindale spent 15 months of the years 1921-22 on and around Groote Eylandt and in the Roper River district, paying particular attention to the collection of insects. At this time several of the aboriginal tribes in the areas were practically untouched by European influences. He discovered the sailing canoes of Groote Eylandt and obtained a great deal of data, later the subject of three long papers, concerning the natives of Groote Eylandt and the west coast of the Gulf of Carpentaria. Considerable distances were covered in the auxiliary ketch *Holly* while the missioner, the Rev. H. E. Warren, was searching for a suitable site for the station.

Tindale's collections, which came to the Museum, comprised over 7,000 insects, 164 bird skins and many mammals from Grooyte Eylandt as well as 487 ethnological objects. The mammals included several novelties which were not studied owing to lack of a mammalogist on the staff, and examples taken some years later by Captain (now Sir Hubert) Wilkins on the same island were described at the British Museum.

On the return trip those in the *Holly* had some exciting experiences. During a cyclonic storm in May, 1922, they took shelter under the lee of an island, but were blown out. An anchor and 45 fathoms of chain were lost and for a day the boat dragged another anchor which was put down. The lugger was on the point of being stranded on the low coast

of the Ross River when the wind changed and blew it out to sea again. The foremast was lost but after a trying time Roper River was reached.

F. R. Zietz made some short forays in the vicinity of Adelaide in order to make field notes and to collect birds and reptiles. At the request of Waite he prepared a catalogue of the lizards of South Australia and this was published in 1920, during which year he sent field notes, photographs and other data to A. Le Soeuf and N. W. Cayley, to assist these authors in the preparation of a proposed work *The Birds of Australia and Tasmania* which was never published.

The Museum Committee in 1923 reaffirmed its decision that field work should be carried on at every opportunity and considered also the question of more systematic collecting than had hitherto obtained. Funds did not permit of more than relatively short excursions during the next three years or so, although Waite collected at Flinders Chase on Kangaroo Island, the Nuyts Archipelago and other localities, with various parties.

During the twenties the writer made a number of excursions, accompanied by friends with similar interests, to various parts of the Flinders Ranges, being granted some extension of annual leaves for this purpose. Zoological material, including 20,000 insects, was secured at Wilpena Pound, Owienagin Pound, Mount Padawurta, Moolooloo, Nuccaleena and other localities: Lea mounted a large selection of these but many of the insects came to be labelled by him as from Parachilna, one of the nearest railway townships on the plain west of the Ranges. At this period an old horse-drawn coach was still travelling between Parachilna and Blinman.

Lea was rather broad in his labelling, a fact which should be known to later research workers. Thus, he once labelled as "Cairns district" large collections which he made between Cairns at sea level and Ravenshoe on the plateau.

Lea was interested in the entomological material secured in the Flinders Ranges and, in furtherance of the resolution of the Committee, supported a suggestion that Tindale and the writer, then Assistant Entomologist and Zoologist respectively, should spend a longer period in the northern section of the Ranges.

This expedition, a project to occupy two months, was the forerunner of many associations in the field. After leaving Adelaide early in November, 1924, some days were spent at Mount Serle, previously a Government camel station, and one of the places where B. H. Babbage had searched unsuccessfully for gold during his 1855 expedition to the north-western areas of the State. From Mount Serle we made a trip to Malkaia, on the North McKinley Creek, in order to examine and prepare a report on a rock-shelter containing aboriginal paintings. The greater part

of the period was spent at Owieandana at the foot of the Gammon Range. Contact was there made with the remnants of the Wailpi tribe of aboriginals and a previously unrecorded set of native rock-carvings was discovered, of which the living brown men knew nothing at all. The skinning of about 80 birds, collecting and pinning of insects, preserving reptiles, as well as the gathering of ethnological specimens and data unexpectedly available, occupied so much time that no collecting was carried out high on the difficult Gammon Range, an object we had hoped to achieve. The results, however, were regarded as completely satisfactory.

After 1919 Lea made numerous brief collecting excursions but it was five years before he commenced an extended trip, which although carried out for another purpose was to prove of great benefit to the Museum. At the request of the Fijian Government he was placed at the disposal of the "Levuana Committee" for 12 months, March 1924 to March 1925. The Coconut Moth, *Levuana iridescens*, was then threatening to destroy the copra industry of Fiji and it was hoped that biological control of the pest would solve the problem. Lea spent most of the year on a mission to Queensland, Thursday Island, Java, Malaya and Borneo in quest of a parasite which would check the destructive moth; the importance of his work in this direction has been submerged in the reports of following investigations.

Lea found that a Tachinid fly in Malaya and Java was parasitising and restricting in numbers a moth (*Artona catoxantha*) related to *Levuana* and similarly a pest. After consultation with J. A. Despeissis, then Superintendent of Agriculture in Fiji, he attempted to introduce the tiny fly as a possible control. Because of the brief life-span of the insect he suggested that a consignment be sent by plane to meet his boat at Torres Straits. The British Government, however, could not then make the necessary arrangements so Lea brought some of the Tachinids as far as Sydney in cold storage. Lea was never optimistic about this experiment in transport; it proved unsuccessful and a few days later his engagement by the Levuana Committee terminated.

Subsequently the fly was introduced by rapid transport to Fiji where it quickly spread, controlling the Levuana moth as Lea had predicted it would.

As might be expected, Lea collected an immense quantity of insect material for the Museum during his 1924-25 journeys. Hitherto his activities had been limited practically to Australia and to his surprise he now realised that the insect faunas he was familiar with were not limited to Australia. On his return, and after examining his collections from Indonesia and Australasia, he wrote "many of these specimens indicate that groups hitherto supposed to be confined to Australia itself have a considerably wider range".

In company with John Sutton, then Honorary Assistant Curator of Ornithology, Tindale and the writer in 1926 spent a few weeks on Kangaroo Island. Birds, fish, reptiles, insects, as well as Crustacea and other marine invertebrates were secured from, and in the vicinity of, the Bay of Shoals on the north coast, as well as at Vivonne Bay on the south coast. The extensive limestone caves at Kelly Hill, not far from Vivonne Bay and near the south coast of the island, had been discovered by E. Burgess of Kangaroo Island a year before, and in them he had collected a number of bones of the small Kangaroo Island Emu *(Dromaius diemenianus)*, seen by Matthew Flinders in 1802 and becoming extinct within the next 30 years or so. The first bones of this bird to be brought to the South Australian Museum were picked up by Professor Walter Howchin at The Brecknells in 1903; F. W. Giles sent others from Cape du Couedic in 1907, but the most comprehensive skeleton material in the Museum came from the Kelly Hill caves and was collected in the main by E. Burgess.

The then Government Geologist, Dr. Keith Ward, was to inspect these caves and we were invited to accompany his party. Like others in various parts of southern Australia the Kelly Hill caverns are not very far below the surface, connected by often narrow passages, and containing vast numbers of stalagmites and stalactites. In some the "roof" had fallen in so that there resulted a pit or deep depression. These pits must have formed veritable traps for larger animals during bush fires. We found a few emu bones and bones of kangaroos in a sloping passage leading from the bottom of one of the depressions into further caves. They had washed, with soft silt, into the steep entrance and so to some extent were protected within one of the caves. Previous to our visit to Kelly Hill, Tindale had found a number of bones of the legs near the Eleanor River, not far from our camp at Vivonne Bay, a new locality for the emu. Beside one bone was the remains of an old clasp knife.

At about this time Waite, with the Government Geologist, explored caves at Mount Taylor on Kangaroo Island and obtained bones of kangaroos.

Towards the end of the year 1926, Tindale and the writer were sent by the Board to Cape York Peninsula, North Queensland, with the object of supplementing the hitherto relatively meagre collections from this part of Australia. January and February of 1927 were spent at Flinders and Stanley Islands, Bathurst Head, the Stewart River, Silver Plains, and on the shores of Princess Charlotte Bay. A good collection of zoological material in all groups was made. Natives of six tribes were met with and 610 selected aboriginal articles, including a single out-rigger canoe, were secured and brought back to Adelaide.

This was in the days before the natives of northern Queensland had become detribalised and more sophisticated. Our main media of barter were tobacco, tea, sugar, flour and a roll of stout galvanised fencing wire, cut into lengths of a foot or so and prized for the making of fishing-spears. It must not be imagined that the natives were exploited when supplied with lengths of wire in exchange for spears with prongs of wood or sting-ray barbs, and other implements. Rather, the natives regarded us as being rather simple to proffer such efficient material in exchange. We have reason to suspect, however, that at least one future ethnologist was not well pleased with this introduction of the iron age into the culture of these peoples.

A trepang cutter had been made available for transport in and around Princess Charlotte Bay and when this was absent a small whaleboat with sail, as well as native canoes, were utilised. This trip was not devoid of excitement as well as somewhat uncomfortable experiences. On Flinders Island, the main island of the group in the large Bay, we were camped for a time in a shack, formerly used by a half-caste overseer employed by the trepang company, which was heavily stocked with bed-bugs, hungry because of the non-occupation of the hut for some time. Even after we left for other fields we spent many an odd hour locating the wretched insects in the seams of our sleeping bags and mosquito nets. Then the small tent with which we were equipped was not proof against the heavy tropical rainstorms of the wet season. Eventually a fairly satisfactory arrangement was made by erecting our rectangular mosquito nets inside the tent so that their canvas tops sloped inwards; a trench was dug between the two of us to carry off the water which came through the tent and then ran off the canvas tops, so that at least we slept in a moderately dry condition. Mosquitoes were superabundant in the rain forests and at times, when shooting birds, it was almost impossible to see the sights of a gun. In aboriginal rock-shelters, or any other situation sheltered from the wind, work was impracticable unless a smoky fire was kept going. At night small anophelines found their way into the mosquito nets although they should have been proof against this invasion, having canvas bottoms, with a small flap through which one crawled inside, as well as the canvas tops. Tindale suggested that probably they pushed each other through the fine netting.

Swamps were traversed in the vicinity of Bathurst Head, opposite the Flinders Island group. This locality was visited by means of the aforementioned whaleboat, the cutter having been blown south by a hurricane. Finally on the way back to Cairns on the little cargo steamer *Canonbar* we came in on the tail end of the "Willis" cyclone of 1926. Some of the wooden houses in Cairns were wrecked by this storm and

roofs were lifted from more solid structures; trees to the south were stripped of leaves—bare skeletons on the hillsides. Unusually heavy rains followed and the country was flooded; 65 feet of water came down the Burdekin and several people were drowned. We attempted without success to reach Tully, where we desired to collect, but found this impracticable, as within a mile or two of the flooded area one was likely to be caught in a fresh outflow of water from the hills.

After reaching Sydney, we spent some time securing birds and insects in New South Wales, mostly along the Nepean River, and marine life in Sydney Harbour.

We had made a cinema film illustrating phases of the life of aboriginals in Princess Charlotte Bay. This was screened on several occasions in Adelaide and a copy of it was purchased by Middlebury College, Vermont, U.S.A.

Towards the end of 1926 Lea made a trip to Barrington Tops in New South Wales; this and the northern Queensland expedition resulted in the addition of 10,000 insects to the collections.

An increasing number of people in South Australia had become interested in the Australian aboriginal and as a consequence were exploring abandoned camp sites in South Australia, as well as rock shelters on the lower River Murray cliffs and elsewhere. As a result of this enthusiasm, the Anthropological Society of South Australia was established in 1926. At this time two interesting aboriginal child burials were discovered in clefts in the lower River Murray cliffs, one between Swan Reach and Mannum and the other at Wongulla. In both cases the body had been placed in a net bag of vegetable fibre and rested on grass placed therein. In one instance the body had been preserved in a "mummified" state by the excreta of opossums *(Trichosurus vulpeculus)* which, mixed with sandy debris from the rocks, had formed a covering two to three inches in thickness on the corpse. At Wongulla the bones of the child had been partly burnt but bat dung, dropping from a ledge above the remains, had preserved in part the soft grass and open meshed fibre bag.

An unexpected link with the past was made when the writer, visiting abandoned native camp sites on Yorke Peninsula in 1928, found and interviewed at Moonta an old aboriginal woman who proved to be the last of the Adelaide or *Kaurna* tribe. This woman, Ivaritji by name, was later brought to Adelaide by A. Ferguson of Moonta, and photographs and other details were obtained by us at the Museum.

Lea had reported to the Museum Committee on several occasions that "our collection of Australian insects is the largest and best extant and that it is growing at a very satisfactory rate." Towards the close of

this period he was still busily conducting field as well as laboratory research, was still examining bird-stomachs, and had persuaded a great many private collectors to bring him material. Still he was constantly recommending small purchases and he records the fact that during the last 12 months he had placed in the cabinets a total of 21,253 specimens. These "smaller" activities went on during the whole of his loyal service to the Museum. He spent October and November of 1928 in the eastern States, where we visited all the Museums and Departments of Agriculture in Queensland, New South Wales and Victoria, the Sydney University entomological collection, and that of the Council of Science and Industry (then in Melbourne) in order to examine certain groups of beetles of economic importance. Besides visiting private collectors for the same purpose, once more he collected personally in all these States.

To illustrate the value of the collection of these insects from a practical point of view, the case of forests of *Eucalyptus* in South Africa may be cited; the trees were being destroyed by beetles which were thought to have come from Australia. A scientist from South Africa (F. G. C. Tooke), came to Adelaide in 1928 and with Lea's co-operation identified the range of the beetle in the Museum collection. It proved to be *Gonipterus scutellatus* and the locality labels showed that this weevil was to be found in the south-eastern portions of South Australia. A study of beetles in the Mount Gambier area, and the shipment of batches of eggs to Adelaide, soon disclosed the fact, made known in the Museum laboratories, that they were kept in check by minute Mymarid wasps parasitic on the eggs. Supplies of the wasps subsequently were introduced into South Africa, and within 12 months the beetles there were under control. The same wasp was shipped to Brazil and North Africa where outbreaks of *Gonipterus* also had occurred.

A small anthropological research party visited Wilgena in November, 1925, under the leadership of Professor J. B. Cleland. Shortly after, in 1926, the Board for Anthropological Research was established at the University of Adelaide. The next year a party led by T. D. Campbell (who was to become Professor of Dental Science at the University of Adelaide in 1954) revisited Wilgena, travelling to Macumba. These excursions inaugurated expeditions which continue to the present. The object of the ventures was to secure all possible data concerning social organization, physical features and ceremonies of aboriginals in the field. A further University expedition was made in August, 1928 to Koonibba on the west coast of South Australia and on this occasion Tindale took part. The physical anthropological data for each trip is indicated by a letter, Expedition A, being that made to Wilgena in 1925.

Important Acquisitions

Apart from collections obtained by expeditions, a great number were acquired by purchase and donation during the first 12 years of occupation of the east wing. The Simson Coleoptera, the huge T.P. Lucas collection of Lepidoptera and the Keartland birds' eggs have been referred to. Despite crowding of exhibition and storage space, the Museum Committee rightly considered that no important material should be passed by without the utmost effort being made to secure it.

The coming of two major ethnological collections to the Museum was a contributing factor to the decision to send Waite to the South-western Pacific Islands. The first of these consisted of a large series of Papuan stone implements assembled over a period of 30 years by A. C. English, who was in a specially favourable position to secure them, having been in the Papuan Government Service under various Administrators, particularly Sir William MacGregor, who himself made an extensive ethnological collection for the British Museum. Purchased in 1916, the A. C. English collection consisted of numerous stone clubs, axes, and other implements from British New Guinea, of remarkably fine workmanship and for the greater part obsolete. The second was donated by Major Balfour Ogilvy and included spears, shields, masks and decorated articles from North-eastern New Guinea.

A collection of 3,500 selected mineral specimens was purchased in 1920 from W. T. Watkin-Brown, of Sydney. The series covers a wide range and represents especially well the minerals of eastern Australia. At this time also, the results of the lifetime effort in natural history of William White, of Fulham, South Australia, were presented. The donation comprised a splendid collection of butterflies and moths gathered from all parts of the world, 233 bird skins and 654 birds' eggs and clutches, many taken in the early days of the settlement of the metropolitan area; a few mammals were included, together with the six cabinets in which the collections were contained.

In 1922 a series of 112 skins of Australian birds was presented by Frank E. Parsons, an Adelaide ornithologist with a private collection. This was particularly welcomed as it constituted a selection specially made to fill gaps in the Museum collection. Eighteen years later the whole of the Parsons collection, comprising an additional 1,066 bird skins, was purchased.

From J. F. W. Schulz, 36 birds and 4,000 butterflies from New Guinea were purchased in 1923; also the collection of 379 birds made by Frank M. Littler and used in the preparation of his book *The Birds of Tasmania.*

During the year 1927 more than 70,000 insects were added to the entomological section. It was towards the end of this year that the whole

of the magnificent collection of butterflies and moths formed by Oswald B. Lower was purchased; a selection from this had been acquired by the Museum at about the turn of the century. Lower, late of Broken Hill and Adelaide, working in association with the noted entomologist Edward Meyrick of Sydney, gathered a large and comprehensive collection of Australian Lepidoptera, particularly rich in species found in South Australia and the Broken Hill area; it includes a great number of type specimens. Conspicuous amongst the moths are large timber-boring species, including the giant *Leto staceyi*, with a wing span of more than 9 inches. Although the greater part of the collection consists of Australian butterflies and moths, good series from India, Malaya, Africa and South America are included.

When Lea and Tindale were deputed to examine this collection prior to purchase they were horrified to find Mrs. Lower, dear lady, beginning an attempt at making the collection appear tidier. She had picked out those specimens with conspicuous labels, and those which had wings of one side mounted on cards, and had piled them in a little heap. Here were priceless type-specimens on their way to destruction. Careful handling soon put things to rights and Tindale was able to conclude that little of significance was lost. It was nevertheless a near tragedy and served to illustrate the desirability of leaving undisturbed any collections made by a departed expert if scientific data is to be preserved, and especially if they are to be offered to a Museum.

R. M. Hawker contributed a further 300 bird skins, mostly foreign, and towards the close of this period Waite presented 108 clutches of birds' eggs; soon after he came to South Australia the Museum had purchased his collection of 316 skins of European birds.

A large fossil cephalopod was secured for the Museum by Mounted Constable T. Jury in 1923; this was discovered 48 miles south-west of Oodnadatta, on the north-eastern flanks of Stuart Range in Central Australia, and on the outskirts of the well-known opal field. It proved to be a new Crioceratid and was remarkable in that it was the largest species to have been discovered, measuring nearly 32 inches in greatest diameter; Howchin and Dr. F. G. Whitehouse later described this new form, naming it *Tropaeum imperator*; plaster casts of this unique specimen were made and proved a useful medium for exchange with other institutions.

Apart from slices and casts of meteorites, four original Australian specimens came to the Museum between 1917 and 1924, three from New South Wales and one from South Australia; the latter, the "Accalana" aerolite, weighing 6¼ pounds, was found in 1917 and purchased from C. Schunke. Two of the New South Wales examples were acquired

through the kind offices of Thomas Flinders Gill. One, the "Yandama," an aerolite 12 pounds 9 ounces in weight, had fallen in the locality from which it received its name; another aerolite came from Cartoonkana, Yandama, and weighed only 10 ounces. The third New South Wales speciment, the "Morden" siderite, was found at Morden Station, 150 miles from Broken Hill, in the Koonenbury Range, and turned the scale at 5 pounds 12 ounces.

The objects of natural history and ethnology, which with a numismatical collection formed the Institute Museum at Gawler, was added to the South Australian Museum collections in 1928. Gawler, situated in an agricultural district 25 miles north of Adelaide, had maintained this large collection for nearly 70 years, but for various reasons the local authorities now considered it to be too great a responsibility. It was in excellent order and as much of the material had been collected fairly early in the history of the State it was a decidedly good acquisition, particularly as regards the aboriginal implements.

It was in 1928 that a restoration of the skull of the extinct Marsupial Lion (*Thylacoleo carnifex)* was received from the Australian Museum, in consideration of remains of this species lent by the South Australian Museum to assist the reconstruction.

Another example of strange chance bringing specimens to the Museum occurred in December 1928, when interest was aroused by accounts of the adventurous voyage of an auxiliary schooner, the *Fides* from Gothenburg to Adelaide. The vessel had encountered bad weather, was dismasted in a typhoon, and underwent other misfortunes, so that 16 months elapsed before she reached Port Adelaide. When 250 miles or so off the coast of Central America, between the Panama and the Galapagos Islands, the crew of the *Fides* sighted a drifting canoe and took it on board. The skipper in charge of the vessel, Captain Olsen, presented this craft to the Museum. Prior to the advent of the European to the western world, 500 years before, canoes of this type were the chief means of water locomotion for the whole of the people south of the great plains of the United States. The canoe, 20 feet in length and hollowed from a single log, is typically Central American, and had been adapted for rowing and sailing, perhaps by other than its original owners.

Honorary Curators

The war and its aftermath affected seriously the finances of the Institution as a whole. In 1919 the Superintendent of Public Buildings had no funds to supply much needed cabinets for the Museum; from 1920 onwards the printed annual reports of the departments under the Board of Governors were abbreviated, and the permanent heads were

urged "to curtail expenditure to the utmost possible extent." From 1924 to 1928 the Board was finding the Government grant insufficient to carry out the normal functions of the departments.

The extent to which the Museum is indebted to honorary curators during these difficult periods cannot be over-estimated and it is improbable that such long-continued voluntary assistance will be offered ever again. It is referred to in some detail because it prevented partial stagnation in some sections and some neglect, the permanent staff being too small to deal adequately with the large collections in hand by this time.

In South Australia, as in other parts of the world, the natural sciences have been advanced by the interest of ministers of religion and medical practitioners, who have taken up some study or another as a "side-line," and in some instances have devoted the greater part of a lifetime to such pursuits. Unhappily, in the present and perhaps more strenuous times, such enthusiasts are less frequently met with.

In 1918 Alan Rowe, then a young man, and later to become a well-known Egyptologist, compiled a catalogue of the archaeological collections and pointed out errors in the translation on the label describing the Ahnas Egyptian Column. Rowe had just been appointed Honorary Custodian of Archaeology in the Art Museum, the Honorary Curator in this section then being Francis Lady Brown. The Egyptian collections remained as part of the "Art Museum" for some years but later this title disappears from the records and the collections reverted to the South Australian Museum.

William T. Bednall, who had served for 30 years as Honorary Curator of Mollusca, resigned, because of failing health, just at the time Waite became Director. Bednall had worked effectively, though quietly and unassumingly, in the interests of the Museum. The bearded and genial Dr. J. C. (later Sir Joseph) Verco was at once appointed in his place. Joseph Cooke Verco had studied medicine in London and returned to South Australia in 1878, practising in Adelaide. Explaining his enthusiasm for shell-collecting he once wrote: "My interest in shells began when I was quite a lad and made a museum in the back yard of our home in Morphett Street, Adelaide. Shells, I thought, were more desirable to collect than insects, less liable to explode than birds' eggs and not quite so easily broken." Verco had made his first gift of shells to the Museum in 1898, the forerunner of many further and generous donations of specimens and apparatus. He conceived the ideal of dredging for Mollusca, rather than relying on littoral material, and financed many marine trips, on several of which, at his invitation, he was accompanied by members of the Museum staff. Verco was instrumental in stimulating many people to collect and donate shells, while his work in classifying

the molluscan collections, and his numerous careful lists and descriptions, are still bearing fruit today. He continued for many years to make numerous contributions in knowledge and material. One collection, brought to the Museum in 1921, included all of the Ralph Tate land shells, with 25 of his type specimens.

Verco personally financed assistance for cataloguing and other work in connection with the molluscan collection. Early in 1922 he purchased on behalf of the Museum one of the largest conchological collections to come to the institution. This, the A. F. Kenyon collection, is of importance in that it comprises world-wide series of Cowries and Cones, including some of the types of the well-known English conchologist John Brazier, later of the Australian Museum in Sydney. He also bought and presented the Matthews collection of shells from South Australia and Torres Strait in north Australia. In 1926 Verco not only added his private collections, gathered at considerable expense, to the Museum material, but provided some of the steel and other cabinets for housing them. The metal cabinets designed by Verco were taken as a standard in this section, which now contains a large number of them.

The Verco material is regarded as one of the outstanding collections of the world. It is recorded as "Verco, Sir Jos. Shells, Adelaide Museum" on p. 137 of *Where is the . . . . Collection?* by Charles Davies Sherborn, D.Sc. Oxon., Cambridge University Press, 1940.

Walter Henry Baker, a pharmacist, for many years had been identifying crustaceans for the Museum and had become Honorary Curator of Crustacea in 1910. In his first annual report he remarked on the fact that "the Museum is indebted to Dr. J. C. Verco for a large proportion of the Crustacea which reaches it. With Dr. Torr and others he has done much dredging off our coast and latterly operations have been extended to Western Australia."

The writer later commenced his research on Crustacea and accompanied Baker, then retired from his profession, on a number of short collecting expeditions. Like Bednall, Baker possessed a quiet, unassuming and thoroughly likeable personality; he published a number of papers dealing with this branch of zoology and described many species in the groups of smaller forms of Crustacea. In 1938 he resigned, but continued his valued friendship with the writer until his death, when almost 92 years of age, on May 6, 1949.

Following his explorations, described in the "Home of the Blizzard," Mawson returned to Adelaide after visiting Europe and America. He had received the Antarctic Medal of the Royal Geographical Society of London after his services as a member of the scientific staff of the Shackleton

Antarctic Expedition, and now was awarded numerous honours, including the King's Polar Medal (2 bars).

During the years of the First World War Mawson was abroad again, Captain E. S. O., 1916-17 and temporary Major in Munitions in 1918 and 1919. The war delayed the provision of cases which he had designed in 1910, these being similar in most respects to those adopted at the famous Vienna Museum; the first of them was not delivered until after the war and all gallery work concerning minerals was perforce suspended until then.

The remainder of the mineral cases were supplied in 1922 and Mawson, helped by Museum Assistant J. Conroy, began in earnest the long task of arranging and classifying the thousands of specimens now available. For scientific assistance the Board engaged R. Grenfell Thomas from time to time, and a little later Paul Hossfeld, also then of the University, was employed in the mineralogical section for a while, his services terminating when he left in April 1928 in order to accompany a Commonwealth Expedition to new Guinea; he was then supplied with an outfit for insect collecting with which to obtain material for the Museum. Hossfield had prepared a series a series of minerals for exhibition and had written about 3,500 labels, most of which had been printed. The mineral gallery was well under way.

Professor Frederic Wood Jones, then filling the Chair of Anatomy at the University of Adelaide, was appointed Curator of Anthropology in 1919, and at once commenced a study if the Australian aboriginal skulls and other human bones in the Museum collection. Associated with him were T. D. Campbell and Dr. Raphael West Cilento, then again at the University of Adelaide following his service in the First World War; Cilento subsequently had a distinguished career, and was knighted in 1935.

In August, 1920, Wood Jones attended the Pan-Pacific Scientific Congress at Honolulu, and functioned as delegate to represent the South Australian Museum. On return he began to catalogue and index the Museum skulls in accordance with a system inaugurated at the Congress. This work was never completed, but Campbell, whom he introduced to the collection, paid particular attention to the dentition and prepared a paper thereon for the Dental Congress held in Adelaide during August, 1921, going on to produce his great work on the Dentition of the Australian Aboriginal. In 1923 a new honorary position, that of Assistant Curator of Anthropology, was filled by Campbell, by this time D.D. Sc. Campbell had developed early an interest in the microliths, or smaller stone implements of the aboriginals, a great number of which he had collected from the deserted camp sites in South Australia, and he trans-

ferred a large and representative series from his private collection to augment the small collections previously available in the Museum.

In 1925 Dr. Ales Hrdlicka, a well-known anthropologist of the United States National Museum, spent some time in the Museum, to which he was attracted by the collection of human skulls, then about 600 in number.

Wood Jones secured fishes and other zoological material for the Museum. He became Chairman of the Fauna and Flora Board, which had been constituted to control the sanctuary at the western end of Kangaroo Island and known as "Flinders Chase." Waite also was appointed to this Board and the two colleagues made several collecting trips to Kangaroo Island. Wood Jones arranged expeditions to the Nuyts Archipelago on two occasions; the parties were accompanied by Waite and all zoological material taken on Pearson and Flinders Islands was handed over to the Museum.

In October, 1922, Wood Jones was elected by the Royal Society of South Australia as its representative on the Board of Governors of the Public Library, Museum and Art Gallery, in place of Professor Walter Howchin. He at once became a member of the Museum Committee and, throughout the whole of his sojourn in Adelaide, Wood Jones was a stimulating influence in the Museum, as well as in the University. He was particularly interested in Australian marsupials, publishing some original contributions. In 1925 he supplied for exhibition in the Museum a dozen specimens illustrative of the birth of the kangaroo. This series, still exhibited and still attracting interest, show the female generative organs and the young in various stages, some taken from the womb, others subsequent to birth but before becoming attached to the teat. Other specimens show the young taken from the pouch and attached to the teat. Diagrams and descriptive labels were supplied by James C. Marshall.

This exhibit aroused a further heated controversy in South Australia regarding the method of birth of marsupials, about which Wood Jones produced a small illustrated booklet for private circulation. One of his final gifts consisted of mammal skins, including co-type specimens.

Between 1922 and 1924 the honorary staff was considerably augmented by the creation and filling of four new positions. It has been mentioned that T. D. Campbell came forward at this period to become Assistant Anthropologist. In addition there were now appointed a curator and assistant curator of birds, and curators of fossils and worms.

Following the death in 1922 of the salaried ornithologist, F. R. Zietz, no serious attempt was made at the time to maintain this position

as a permanent office. Because of the smallness of the scientific staff, little or no progress could have been made in this section for the next decade. However, soon after Zietz died, Dr. Alexander Matheson Morgan became Honorary Ornithologist. Morgan, like Verco, was a medical man and South Australian born. In the late nineties, then at Laura in South Australia, he was presenting bird skins to the Museum; collections from the Gawler Ranges and elsewhere followed.

John Sutton, one-time lecturer at the University and retired from his position as a bank inspector, worked with Morgan as Assistant Ornithologist; in 1934, after the death of Morgan, he took over the senior position.

These two bird lovers, having no staff to supervise, settled down to work. F. R. Zietz in 1907 had commenced a card-catalogue of the collection but this had never been completed. Morgan, with Sutton acting as amanuensis and diligent searcher of old records, brought this catalogue up to date and maintained it. Sutton's meticulous penmanship is a distinctive feature of the registers during his long period of voluntary service.

Our osteological material in the bird section was meagre before these appointments but the representations were now augmented. Morgan presented his private collection of 686 sterna, crania and other bones in 1927. Later, and not long before his death, he followed this gift by another, the donation of a cabinet containing 600 sets of eggs, all with accurate data, to which he soon added a further 193 clutches; previously he had given upwards of 500 bird skins. In June, 1929, in company with E. Burgess and a Museum officer, he explored the Kelly Hill caves at Kangaroo Island and secured skeletal material of several wombats and emus, both animals extinct on the island. A few years later he presented his private collection of aboriginal weapons and stone implements to the Museum.

Morgan took an active part in all movements fostering the study of birds. He was one of the five foundation members of the South Australian Ornithological Association, its first President, and President during five subsequent sessions. He became a member of the Royal Australian Ornithologists' Union in 1901, and in 1922, in company with Waite, he represented the Museum at a Congress of the Union in Adelaide. In 1929 he was elected a Corresponding Fellow of the American Ornithologists' Union. He became an honorary curator with a view to carrying out research on the Museum material but seeing the need for improvement he decided, with Sutton's invaluable assistance, to put all in order first; as it happened he had little time left for the studies to which he had looked forward.

Walter Howchin, of the University of Adelaide, was elected by the Royal Society of South Australia as representative of the Society on the Board of the Public Library, Museum and Art Gallery in 1910, holding his position as a valued member for 22 years. He was accorded the title of Honorary Professor of Geology (Stratigraphy and Palaeontology) at the University in 1918 and retired two years later. When he was replaced by F. Wood Jones on the Board in 1922, he was at once appointed Honorary Curator of Palaeontology, an office he retained until his death in 1937, at the age of 92.

Howchin naturally had been a member of the Museum Committee; also he had been working on the fossil invertebrates in the Museum long before he came on the Board. There is little doubt that a discovery made just before his retirement from the University assisted his decision to offer his honorary services in the palaeontological section of the Museum. A bore was being sunk at the Abattoirs near Adelaide and at a depth of 400 feet a considerable deposit of Pliocene shells and other marine detritus was encountered. Howchin and Sir Joseph Verco were intrigued with this opportunity of gathering a rich collection, and Howchin was instrumental in arranging that many of the specimens, including co-types of new species, came to the Museum.

In February, 1927, Wood Jones resigned his seat on the Board, and the Royal Society sent in his place Dr. Thomas Harvey Johnston, then Professor of Zoology at the Adelaide University. He at once became a member of the Museum Committee and at the same time a position on the honorary staff was created for him—Curator of Helminthology. He continued his life-time of interest in certain parasitic worms, and his association with the Board, until his death.

Harvey Johnston was born in Sydney in 1881 and came of northern Irish ancestry. He obtained a thorough grounding in zoology under the tutorship of well-known Professor W. A. Haswell at the University of Sydney. After occupying a number of professional positions he became the first Professor of Biology at the Queensland University in 1919; in 1921 he was appointed to the newly created Chair of Zoology at the University of Adelaide, but was released from his duties for a while to enable him to continue his search for a biological control of the prickly-pear pest in the eastern States.

Almost immediately, Harvey Johnston augmented the Museum collection and eventually his type material of species described after he came to South Australia was deposited there. He also donated 182 microscope preparations of molluscan radulae.

H. H. Finlayson had been stimulated by Wood Jones in his study of our marsupials, and had presented a number of mammal skins to the

Museum. In 1927 he was appointed Honorary Associate in Mammalia, a new position.

Waite became impressed with the extent of the work undertaken in person by the honorary helpers. While at first he had considered their main duty to be that of supervision, ten years later he felt compelled to write: "Our honorary curators are most exceptional, inasmuch as they are active workers and not mere figureheads, as so often happens in similar circumstances." The Board was also cognisant of the fact that the voluntary workers had relieved what well may have been a distressing situation, and at the close of the period under review, expressed their gratitude to those "who devote such a great portion of their leisure time to the scientific—and even the routine—work of the sections in which their interests lie . . . ", acknowledging also their services to the public.

Research Publications

Waite had been on board the *Aurora*, in charge of zoological matters, during the first sub-antarctic cruise of the Australasian Antarctic Expedition and also was on the *Tutanekai* a year later when she proceeded from New Zealand to Macquarie Island for the purpose of reprovisioning the scientific party stationed there by the expedition. It is not surprising therefore that Mawson sent the sub-antarctic and antarctic fishes to Waite for description. One of the writer's first tasks at the Museum in 1914 was to assist Waite in the preparation of drawings of these fishes, and also to remove and preserve their stomach contents and parasites. About 12 years later, following the death of the New Zealand carcinologist Dr. Charles Chilton, certain of the smaller groups of Crustacea taken on Mawson's Expedition were sent to the writer for description, and these included some of the specimens from the fish stomachs. Professor Harvey Johnston completed the editing of the volumes of the Australasian Antarctic Expedition biological reports, a task begun by Professor W. A. Haswell.

Ever since the eighties of the previous century, research has been considered one of the important activities of the South Australian Museum. Now, members of the staff became increasingly productive of papers for publication in various scientific journals, particularly that of the Royal Society of South Australia, of which they had become Fellows.

Early in 1917 Waite proposed to the Museum Committee:

> . . . . that the S.A. Museum issue a scientific publication to be devoted to the research work of the staff, including records of expeditions, description and illustration of objects in the Museum, occasional notes and the work of outside investigators dealing with Museum material. The publication to be edited by the Museum Director, to be issued at no stated intervals, but when material to form a part is available, a suitable number of such parts to form a volume.

At this juncture the Board, recognizing the importance of the facilities for publication made available by the Royal Society, wrote to its Council expressing appreciation. A year later it was decided that:

. . . . the sum of one hundred pounds (£100) from Morgan Thomas Bequest Account be appropriated for 1917-18 for printing 'Records of the South Australian Museum,' and that any unexpended balance thereof on June 30th, 1918, be carried forward to the credit of the Museum Records Account for 1918-19.

This satisfactory beginning is worth noting. The cost involved about one-tenth of the annual income derived from the Museum share of the Morgan Thomas Bequest; present day printing costs of a similar issue would absorb the greater part of the reduced interest from Bequest Funds.

The first part of the *Records* appeared on May 24, 1918, and ever since at least one number has been published annually, the issues now covering a period of 38 years.

By the end of 1928 three volumes had been published. Included are 67 individual papers, 41 of which were prepared by members of the Museum staff, both honorary and permanent; the authors included Sir Edward Stirling, Sir Joseph Verco, F. Wood Jones, Walter Howchin, T. D. Campbell, W. H. Baker, E. R. Waite, A. M. Lea, F. R. Zietz, N. B. Tindale and H. M. Hale. The remaining contributions, by researchers elsewhere, dealt with material in the Museum collections. With its own publication available for exchange purposes, the number of scientific periodicals coming to the Museum increased rapidly and today the institution possesses one of the largest, if not the largest, departmental library in the State—exclusive of course of the Public Library.

By the early twenties it had become apparent that there was lack of inexpensive but accurate books dealing with the animals and plants of South Australia and it was felt that this had been a handicap to the progress of science in our State. A group of people representing the then practically inactive South Australian Branch of the British Science Guild (which was later absorbed by the British Association for the Advancement of Science) met and elected a small "Handbooks Committee" to implement the proposal if it were practicable. Specialists in the study of zoology, botany and geology were approached, and willingly agreed to prepare the desired books. Thanks to the support to the then Premier of South Australia, Sir Henry Barwell, K.C.M.G., it was agreed that these books should be published by the State, and printed at the Government Printing Office. The first issue, "The Fishes of South Australia," by Waite, and Part 1 of "The Mammals of South Australia," by Wood Jones, appeared in 1923, with Waite as editor. Waite continued his editorial duties until his death, since which the writer has taken over the task. Almost one-half of the handbooks published to date have been written by members of the Museum staff. A provision of the original

agreement was that the works must be published by the Government Printer; unfortunately for some years past the last-named has been greatly handicapped by lack of space and equipment to cope with his growing commitments, and publication of the handbooks today is limited.

A Changing Staff

A number of changes in staffing took place during the period reviewed in this chapter. Reference has been made already to the honorary curators and to the appointment of N. B. Tindale; also to the death of Frederick Robert Zietz.

Robert Zietz, born in 1874, had been appointed student apprentice in 1891, became Museum Assistant six years later, Ornithologist and Assistant in 1910, and Ornithologist in 1919, holding this last position until his death on April 10, 1922. His paramount value to the Museum lay in the fact that he was so well acquainted with the history and contents of the collection. He knew the whereabouts of everything, rendered invaluable assistance to the authorities, and has left his mark on the records of the institution.

Several members of the institution enlisted for active service in the First World War; amongst those most closely associated with the Museum were Hately W. Marshall and Malcolm McRae, then respectively Chief and Junior Clerks in the administrative section.

The death of the General Secretary, J. R. G. Adams, occurred in 1919, he having served as Assistant Librarian in the Public Library (1879), Librarian (1896) and in the principal executive position of the institution since 1904.

Miss Lucy M. Harwood, of the administrative staff, was for a short time and during the illness of Adams, Acting General Secretary but next year Marshall was appointed General Secretary, a position he held until the three departments came under separate control in 1940.

Taxidermist and Articulator C. G. A. (Otto) Rau died in 1927, after 45 years' service. Waite penned a testimony to the excellence of his work, carried on with his brother J. Rau for such a long period.

Otto Rau was a meticulous and skilled worker. As an example of his patience one remembers that he was asked to remove a skull from one of the small worm-like Blind Snakes *(Typhlops)*, to be drawn by the writer as an illustration for one of Waite's papers. Meagre microscope equipment was then available at the Museum and Rau sat for hours, reading spectacles over his ordinary glasses in order to obtain a slight magnification, picking at the tiny skull with forceps and needle.

Wood Jones was Acting Director during the latter half of 1926, which Waite spent in Europe and America, where he hoped to renew old acquaintances and to familarize himself with modern developments in museums.

In the famous American Museum of Natural History in New York, Waite spent three weeks planning the arrangement of group cases illustrating phases of Australian zoology. He was ill on the voyage to England and returned to South Australia tired and dispirited after seven months of strenuous travelling, during which he found that, after 30 years' absence, much of his earlier associations were gone. Also he considered that his surveys in the United States of necessity had been far too brief.

After having spent 40 years in his chosen field Waite died in January 1928 *en route* to Hobart, whence, despite a serious illness, he was journeying to attend a Science Congress.

In South Australia, Waite had taken an active part in activities outside the Museum but in some way or another connected with it. Like Stirling, he became a member of the Zoological Society of South Australia and served on the Council of that body. He was a member of an Advisory Committee for protection of native fauna and flora, of the Fauna and Flora Board (Flinders Chase), of the "Handbooks Committee," of the Anthropological Society of South Australia, and of the Royal Society of South Australia, serving on the council for five years and being senior Vice-President during the year of his death. He was patron of the Anglers' Association of South Australia and founder of the South Australian Aquarium Society. He had become a Corresponding Member of the Zoological Society of London.

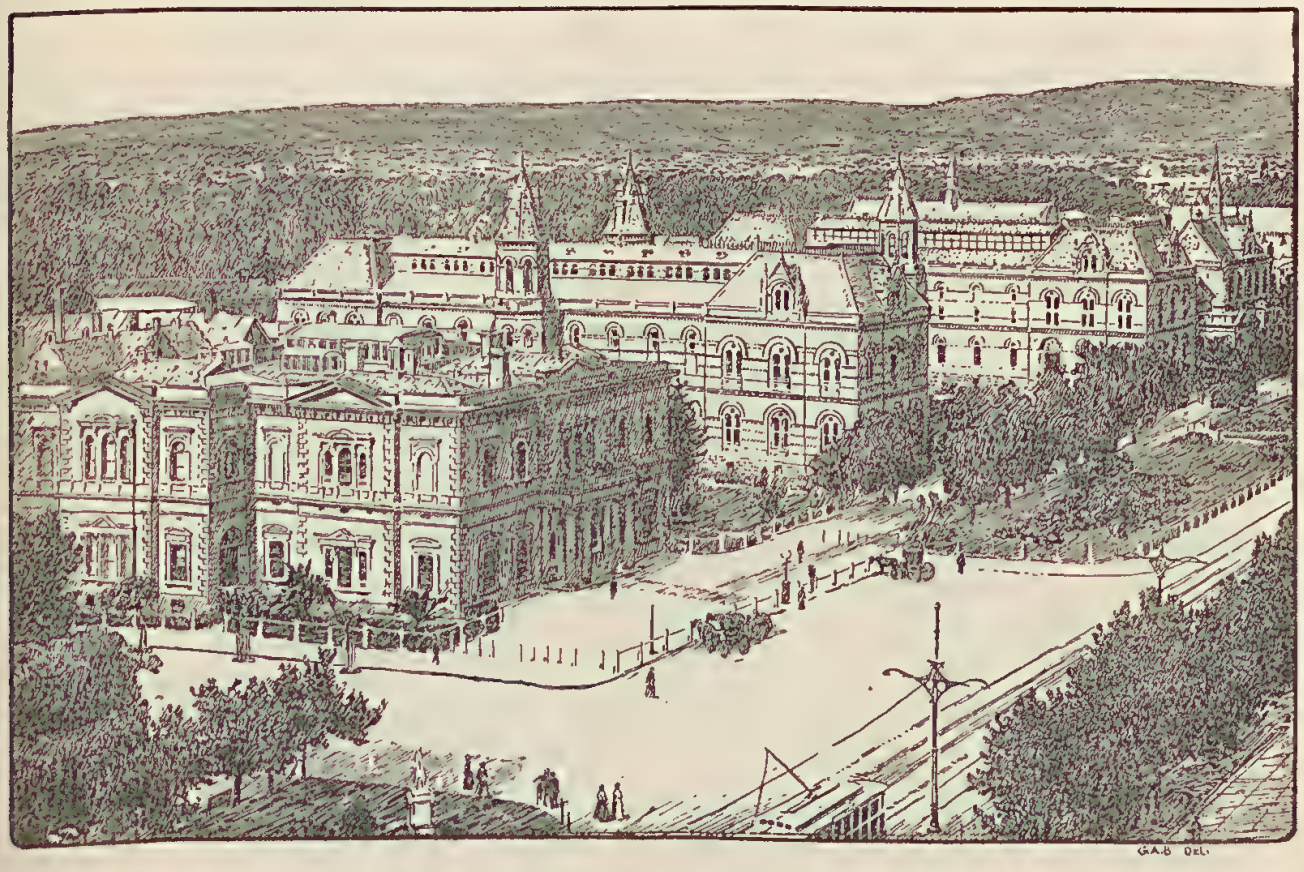
Following Waite's death, Dr. R. Sanders Rogers, Vice-President of the Board, was appointed Acting Director and applications to fill the vacant permanent position were called for. The writer was one of the applicants and was favourably considered. The Board was a little apprehensive regarding his relative youth, however, so he was appointed Museum Curator and Professor T. Harvey Johnston was offered "for the time being" the position of Honorary Director—a watching brief as it were. Both positions were filled on May 1, 1928, and three years later the writer became Director.

The Senior Attendant, O. N. Noake, had attained the age of 70 in 1918, but because of his satisfactory service and continued vigour, his services were retained in the same capacity until the end of this period. The Board then considered that at the age of 80 he should be retired and when informing him of their decision, included a special resolution of appreciation of his long and faithful service for 48 years.

In 1923 Bernard Charles Cotton had been added to the staff as a cadet to assist Sir Joseph Verco in his work on the now vast accumulation of unidentified molluscan material and to help in the preparation of card catalogues in this section. He shortly became Museum Assistant and Photographer, and in 1928 Assistant Conchologist and Photographer. At the same time N. B. Tindale was appointed Ethnologist and Assistant Entomologist.

Buildings and Lands

Only three years after the opening of the east wing the Board was urging completion of the original building plan (see drawing facing p. 35) by erection of the large central structure, which if provided would now be surrounded on three sides by the existing wings; the Board reported that "until this has been effected a considerable store of public treasures must remain hidden . . . ."



NORTH TERRACE, ADELAIDE, 1915

South Australian Institute, left foreground; western wing (Public Library) and eastern wing (Australian Court of Museum)

Apart from lack of exhibition space, however, the Museum now required a much larger room for the growing spirit collections. Hundreds of gallons of alcohol in the basement of the Australian Court provided a dangerous factor in a building not provided with fire-proof doors at any point and with a lift shaft at each end. Accommodation for the artisans was becoming a problem as more and more of the basement rooms became filled with collections purchased and donated. A larger photographic dark room, a packing room, and storage for collecting gear were pressing needs.

During the years 1916 and 1917 a considerable area of buildings at the rear of the institution was vacated by most of the former occupants,

the Police Department, the Armed Forces, and the Destitute Asylum inmates. As already mentioned, the last-named building was in part occupied by the Museum in 1918, making possible the transfer of the entomological collections to the Australian Court.

The Board made repeated efforts to acquire the vacated area and hoped also that the ancient buildings would assist the storage problem to some extent. Following investigations by the North Terrace Reserves and Railway Centres Royal Commission, on January 6, 1921, this area to the north of, and adjoining, the grounds previously allotted to the Board, was dedicated by proclamation for Public Library, Museum and Art Gallery purposes, the additional land amounting to over two acres; the total area now available was approximately 6½ acres, with a frontage to North Terrace of about 680 feet.

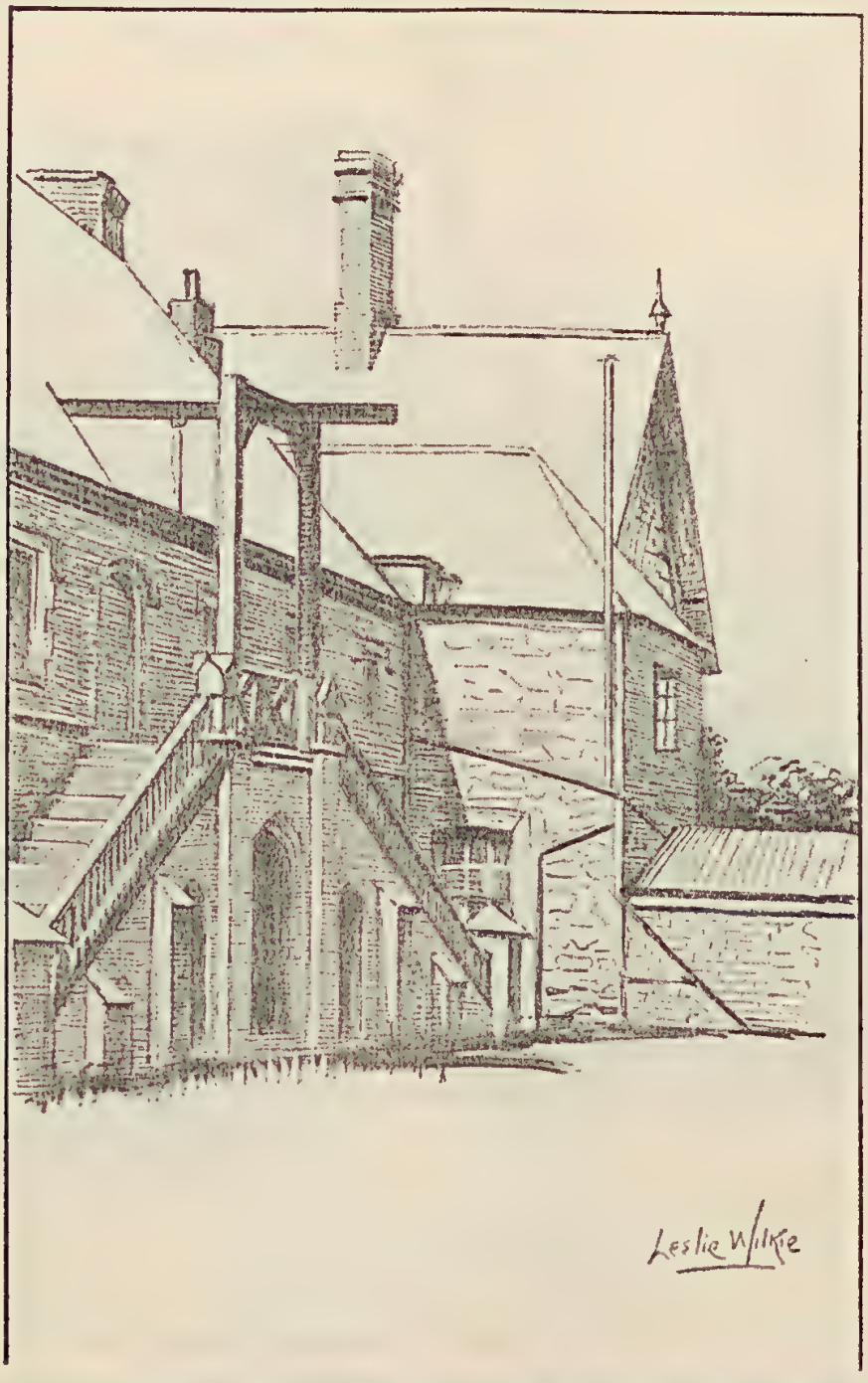
The Department of Defence occupied part of the old Armoury until May 1, 1923, and the Destitute Asylum Board and the University used buildings on the lands of the Board for a while.

It was not long before the Museum overflowed into parts of these old buildings but soon they proved not at all satisfactory as a solution of the problems facing all concerned. By 1926 the Board was despondent and reported:

> The old buildings on the northern portion of the Board's land, although outwardly very picturesque with their old English architecture, are really of little value from a utilitarian point of view, owing to the ravages of white ants in the wooden floors, etc., and the constant fretting away of the lower portions of the walls through the absence of damp-proof courses. The Board will soon be faced with the necessity of recommending the Government to spend a considerable sum in repairing these buildings, or, as may be thought more economical in the long run, to demolish some of them and erect suitable buildings in their stead. In one building used for the storage of Museum material, the fall of part of the ceiling disclosed the fact that portions of the large wooden joists supporting the floor above had been eaten away by white ants, and that there was a grave risk of the collapse of that floor. By removing the Museum specimens and shoring up the ceiling the danger has been obviated for the time being, but unless immediate steps are taken to remove the affected timber the inroads of the insects will continue. In another building, where portions of the floor were replaced a year or two ago, further damage by the white ants has been discovered.

Next year the ravages of termites continued and it was pointed out that "unless drastic preventive measures are taken without delay one at least of the store-rooms will have to be vacated owing to the unsafe condition of the floors." At the same time a large nest of the insects was discovered under the floor of the north wing—the "General Court" of the Museum—and show cases were found to be damaged. The Architect-in-Chief restored woodwork in floors and cases, but in 1928 a further outbreak occurred, and another during the following year, when all cases

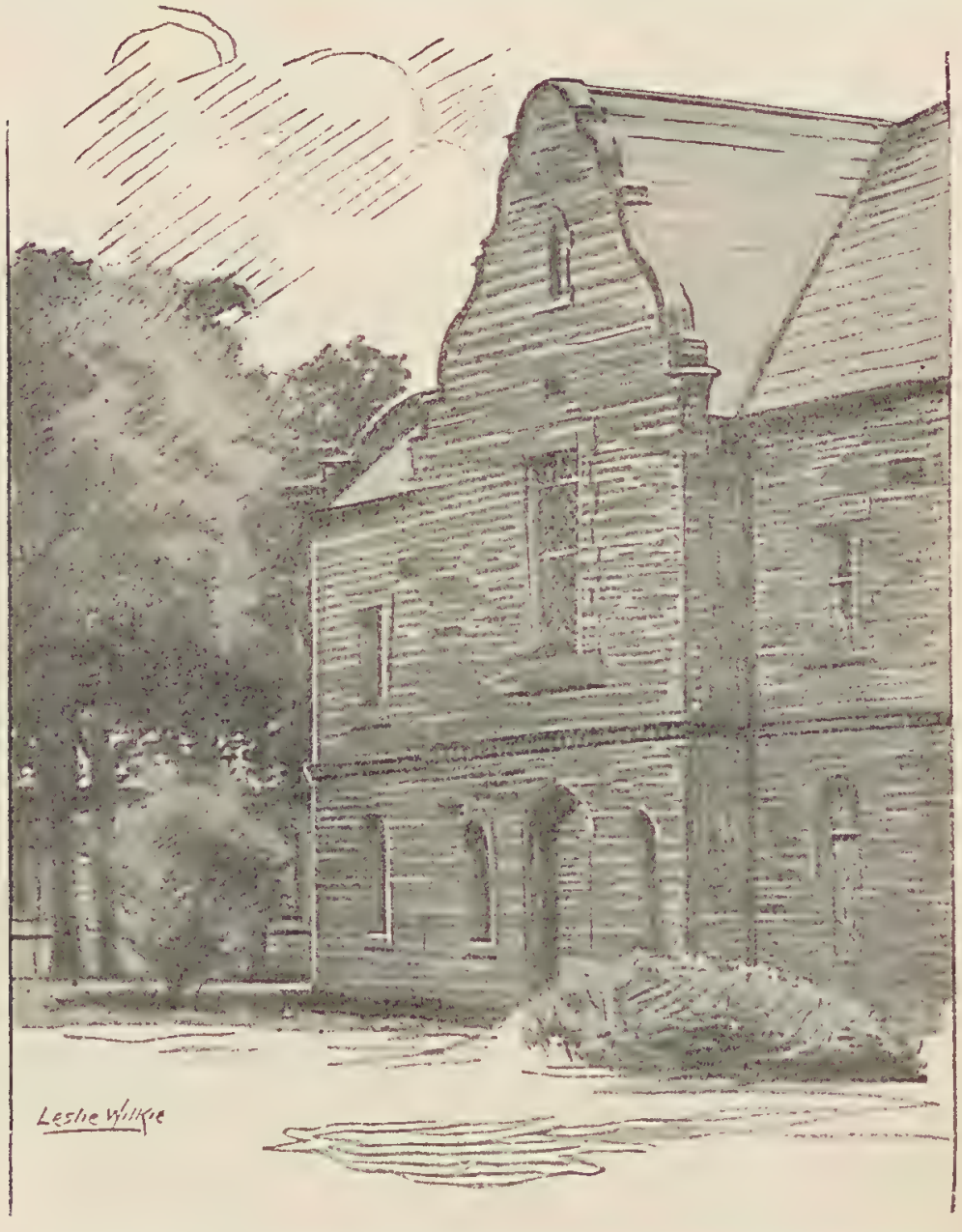
were raised on metal blocks and the ground poisoned. Since then the depredations of termites in this wing have ceased but in the outbuildings they continue from time to time to give evidence of their presence.



Portion of the Armoury, erected 1855, and adjacent cottage

The Barracks for the Mounted Police and the Military Armoury, both two-storey buildings, were completed in 1855. Part of the first-named now has been removed at the boundary line of the land under care and control of the Museum Board; the upper floor accommodates stored

collections of African and Pacific ethnology for which no display space is available, while two large rooms there have been converted into preparatorial work shops. The old Armoury is fitted up in part as a store for collections preserved in alcohol and in part as work and store rooms.



Portion of western wing of Destitute Asylum, erected 1867

The eastern end of the Destitute Asylum was erected in 1858-59 as a Government store, and was known as the "New Colonial Store" while the central and western portion was added between 1860 and 1870. By 1874 the first portion was no longer used as a store but as the southern destitute men's quarters. Later it became an infirmary attached to the Destitute Asylum for men. Only a very small part of these buildings is now utilized by the Museum.

5

Reorganization 1928 - 1940

In the Museum

The beginning of this period ushered in a long-term reorganization of the Museum, and ended with the establishment of three new Government departments, the Public Library, the Museum, and the Art Gallery.

As noted already, some readjustment of staff immediately followed Waite's death. During the next ten years other changes occurred and some additions were made to the permanent staff. George J. Stansfield, after the death of O. Rau, served as assistant to J. Rau, but in an accident severed the tendons of a wrist and was placed on the attendant staff; later he became Caretaker to the whole institution, a position which he occupied with satisfaction to all until his retirement. Alan Rau replaced Stansfield in 1929 and is still one of the preparators. During this year Archibald Hay, who had been on the staff of the institution since 1922, was transferred permanently to the Museum, his work being chiefly that of artist and signwriter. Herbert T. Condon came on the staff as a cadet, mainly to assist the Honorary Ornithologist; later he was to become the official Ornithologist.

The formator, Robert Limb, retired after 18 years of service and John Conroy, now Senior Museum Assistant, took over his work of plaster moulding and casting. The senior taxidermist, J. Rau, retired in 1936 after 42 years of valuable and conscientious service, and his son, A. Rau, was at once elevated to his position.

Because of insufficient staffing, by 1928 the basement had become crowded with unclassified accumulations demanding urgent attention. Within the first year, installation of large racks afforded double the capacity for specimens preserved in fluid, extra cabinets were in course of construction and cataloguing of all unregistered collections had been commenced. This programme has continued for 28 years, during which time

the Museum owes much to the successive Architects-in-Chief and their Ministers for co-operation in provision of many cabinets, shelving, alterations to rooms, construction of storage annexes and so on. The collections would be in a parlous state today if such provision had not been made. The ancient buildings at the rear of the Museum, however, continued for years to be far from satisfactory, although pressure of space made necessary their use for storage and working accommodation. Termites continued their invasions and demanded constant attention. A further trial was experienced during the Christmas holidays of 1929 when remodelling of North Terrace upset the drainage of the gardens fronting the institution; heavy rains occurred at this time and miniature lakes collected which isolated the buildings, while water pouring across the lawns threatened to find its way below the low-lying floor of the most economically built part of the Museum—the north wing—which previously had experienced so much trouble from dampness. Fortunately, in anticipation of such a contingency, miniature parapets had been built around the ground-level ventilators not long before. The drainage on the Terrace was adjusted, but as a result of the flooding termites became active in the north wing and it was at this stage that all ground-floor cases were raised permanently on iron blocks. At the same time the white-ants made their way from underground through minute cracks in the concrete floor of the basement of the Australian Court (east wing), partly destroyed the photographic dark room therein and attacked wooden shelving and other fixtures. It was then that the writer decided to use steel cabinets and shelving in preference to wood, but this led to some mistakes. Experience taught that during the winter steel cabinets are unsatisfactory for storage of insects and bird skins, tending to relax the specimens and to encourage mould to some extent.

As Curator, and later as Director, the writer attended only meetings of one of the four Standing Committees, that of the Museum. A most helpful move was the appointment as Honorary Museum Consultant of Professor Harvey Johnston, who thus became a "referee" on the Board in matters relating to the demands of the Museum, to which he afforded such firm support.

At this time the Museum possessed four microscopes, two of which were then modern, having been purchased less than ten years before, when the writer became interested in the smaller Crustacea. It was considered that every encouragement should be given for research in the Museum as well as in the field, and one of the earliest moves in the general reorganisation was a request that the Board set aside a sum for purchase of laboratory equipment. This was approved, and the policy of providing adequate research apparatus has been continued ever since. In the case of microscopes, for example, the Museum at present has 14 modern binocu-

lars and monoculars, including a Holophot apparatus and three-phase contrast outfit, as well as a few older instruments.

A practice which has been continued for years originated in 1932, when each week or so a selected object, if possible of topical interest, is displayed in an isolated well-lighted case at the front entrance. This attracts regular lunch-hour visitors who come to see "what's new" at the Museum.

Arthur M. Lea had been Entomologist at the South Australian Museum for 15 years when he died with tragic suddenness on February 29, 1932. His grave, fittingly, is not far from that of Canon Blackburn, who had established a record by describing about 3,000 new species of Coleoptera. Lea had eclipsed this performance in 1918 and reached a total of 5,432, probably an incomparable world's record.

Lea's successor, Herbert Womersley, took office on January 1, 1933. Prior to his appointment at the Museum, Womersley was Entomologist in Western Australia to the pasture and field pests section of the Council for Scientific and Industrial Research (now the C.S.I.R.O.); Tindale now relinquished his subsidiary title of Assistant Entomologist and became full-time Ethnologist retaining, however, his research interest in the Lepidoptera. During the same year, on July 29, Sir Joseph Verco died, having held the position of Honorary Curator of Mollusca for 19 years; for part of this time B. C. Cotton had been official Conchologist, but continued to carry out photographic work for the Museum. Malcolm E. McAnna now came on the staff as assistant in the preparatorial section, as also did Paul Francis Lawson a couple of years later.

Classes of school children had been visiting the Museum for a long time and the teachers often asked, as they do today, for a guide lecturer to be supplied. Immediately after his appointment, the writer approached the then Director of Education suggesting that our great storehouse of material could be used more freely by or through his Department. Further, he proposed that classes visit the Museum regularly in order to participate in a series of illustrated talks delivered by members of the scientific staff, and to see demonstrations arranged by the preparators. It was hoped that, if the usefulness and popularity of such an arrangement were demonstrated, the Education Department would supply one or more teachers to carry on this work within the Museum. At the time no room in the Museum was available for lecture purposes but thanks to the co-operation and sympathy of my friend, the late H. Rutherford Purnell, then Public Librarian, the Children's Library was used for a while. This, as now, was situated on portion of the ground floor of the vacated Police Barracks. The first class was held during school hours, on June 2, 1933, when the Director gave a talk on the geography and natives of north Queensland. Subsequently, demands for classes and demonstrations be-

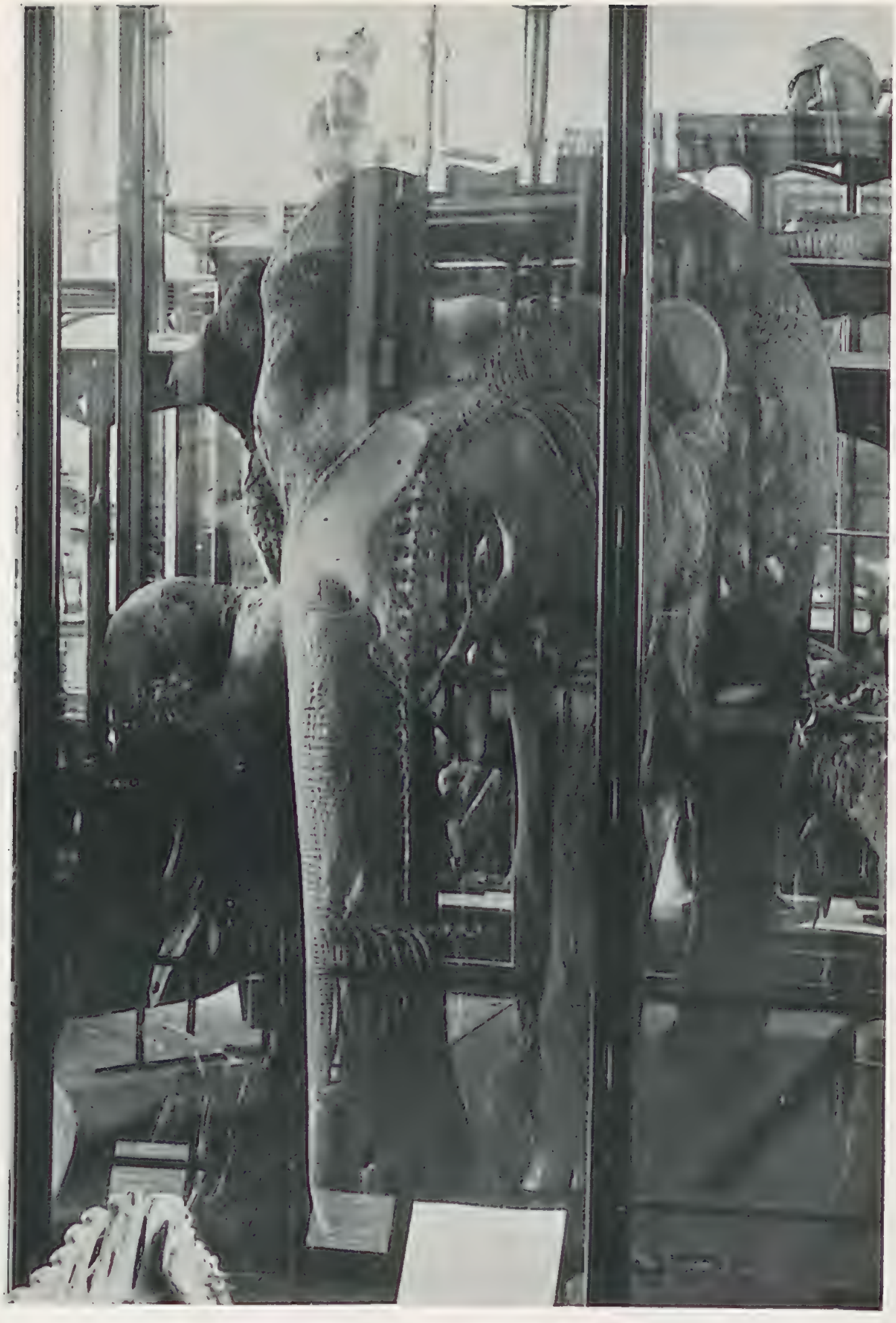
came so numerous that the staff could not cope with them and soon they were limited to Adelaide High School students, for whom a planned series of talks was prepared. The Director then stated, in the Board's report to the Government: "It is to be sincerely hoped that our effort towards the cultivation of the interest of the younger generation is but preliminary to further advances in this direction. In progressive overseas museums, a building or a gallery is reserved for talks to children. I am strongly of opinion that a room should be set aside as a Children's Museum and lecture room."

Meanwhile, a great deal of material was removed from exhibition. So crowded had been the exhibits in the Australian Court that on entering any of the three galleries the visitor was confronted with closely grouped cases, the opposite end of each hall being completely hidden; all cases were then the old "museum colour"—a funereal black. Removal of some cases resulted in an impression of spaciousness, while certainly there was greater freedom of movement. Also, specimens were so crowded in many of the cases as to present a mass of material of limited educational value. The hundreds of human skulls were removed from near the front entrance to the reserve collections and also a large number of specimens duplicated on the galleries or suffering from exposure to light. In place of exhibited collections of Australian birds' eggs, an extensive teaching series was installed, showing nesting places, and types of nests and eggs; apart from actual specimens, including birds, many colour sketches are shown, the work of Condon, who arranged the whole series.

This work was in progress when the Carnegie Corporation of New York became an important influence on the museums of Australia.

The Carnegie Corporation

Dr. Frederick Paul Keppel had been elected President of the Carnegie Corporation of New York in 1922, a position he held for 19 years. He was keenly interested in all cultural and educational institutions and at his suggestion two competent investigators were invited to survey the museums and art galleries in Australia and New Zealand, all expenses to be met by the Corporation. The selected commission consisted of Sydney F. Markham, an Englishman with considerable experience of museums and art galleries, and Professor H. C. Richards of the University of Queensland. These experts confirmed the opinion of three successive Directors of the South Australian Museum regarding the unsuitability of its buildings. In their report, published in 1933, they stated: "With the exception of Canberra there is scarcely a museum in the Dominion that can be regarded as up-to-date from the point of view of lighting, fire prevention or staff accommodation. In many the lighting is unsatisfactory, and reflection is at its maximum."



"REFLECTIONS IN ADELAIDE"
Cases in north wing, 1932

It is worth recalling that in 1882-3, the Board of Governors of the South Australian Institute recorded its opinion that "electric light is especially well suited for the lighting of larger public buildings." After a lapse of half a century, the Museum was the only one of three institutions under control of the Board which had been neglected in this respect.

No attempt had then been made to reorganize the older part of the Museum, the north wing, and the investigators were intrigued to find the reversed skeleton of the Indian elephant "Miss Siam" superimposed on her mounted skin by reflection in the glass of the exhibition case; the accompanying photograph was used in their report and is there entitled "Reflections at Adelaide."

Dr. Keppel himself visited Australia in 1935 and when in Adelaide commented on the fact that we are fortunate in having our cultural centres grouped together on North Terrace. This is indeed a most fortunate circumstance, demonstrating the foresight of the responsible authorities who pressed for the present site of the Public Library, Museum and Art Gallery. The juxtaposition of the Museum to the University, with its science libraries and laboratories, has proved a tremendous advantage to the staff. Any situation far removed from the University would present decided drawbacks and could affect adversely the useful liaison, of 80 years duration, between the two bodies.

In their 1933 report, Markham and Richards commented on the relative isolation of Australian museums, and suggested that curators should be given an opportunity of visiting the best museums abroad as part of their training. Further, they proposed that a conference of the Directors of the museums and art galleries of Australia and New Zealand should be held. This, thanks to the generosity of the Carnegie Corporation, was arranged, the meeting being held in Melbourne during May, 1936. As a result of the conference the *Art Galleries and Museums Association of Australia and New Zealand* was formed, with H. C. Richards as the first President. One of the first actions of the Association was to request Dr. Keppel to arrange for the sending of an American taxidermist to Australia and New Zealand, to demonstrate modern methods of taxidermy and display, in general not well developed in these countries. The Corporation sent Frank Tose, Chief of Exhibits at the Californian Academy of Sciences, in August, 1937. He spent ten days in Adelaide, instructing the preparators at the South Australian Museum. During the following October and November he conducted a class at the Australian Museum, which was attended by A. Rau and workers from other museums.

This year the "Melrose Wing," a splendid addition to the National Art Gallery of South Australia, was almost completed. The prints, ceramics, historical items and the coin collection were removed therefore from the southern portions of the second and third exhibition galleries and halls of

the Australian Court. This made possible two important additions, a "Children's Museum" and a number of diorama cases on the bird gallery.

Dr. Keppel had written to the Director offering a Carnegie grant to the Museum if a satisfying proposal were put forward for its expenditure. The suggestion was made at once that this welcome offer be utilized for establishment of a museum for juniors. Fortunately, a hall opening from the bird gallery was now available and in this were installed cases with specimens, labels, diagrams, models and photographs illustrating and describing in sequence:

(1) The earth and its life.
(2) Man and his activities.
(3) Friends and foes of man.
(4) Animals in relation to other animals.
(5) Animals in relation to environment.

This section of the Museum still attracts as many adults as it does juniors and adolescents, and points the fact that exhibition at high school standard satisfies also the majority of the public.

The Children's Hall is completely lighted; it was opened in May, 1938, and one evening of that month the Minister of Education, the Hon. Shirley Jeffries (now Sir Shirley), together with his chief executive officers, visited the Museum and expressed satisfaction with, and appreciation of, the innovation.

Shortly afterwards, an adjoining room was fitted up as a class room, equipped with an Aldis epidiascope and a 16 mm. sound projector.

Portion of the grant was used for employment of specially qualified teachers, notably a musician with a knowledge of primitive instruments. He conducted weekly classes and at one period formed an orchestra of school children playing native drums, flutes and drone pipes of the Australian aboriginal.

In 1938 the "coves" and fronts of a series of diorama cases had been completed by the Architect-in-Chief, and installation of bird-groups in natural surroundings had been commenced.

The backgrounds of these cases were in the main painted by two well-known Adelaide artists, George Whinnen and Robert Waden, both now deceased. Six large dioramas illustrate respectively a rookery of the Pied Cormorant *(Phalacrocorax varius)*; a scene at Mount Connor in Central Australia with Galahs, or Rose-breasted Cockatoos *(Kakatoe roseicapilla)*; a peak in the northern Flinders Ranges as a setting for the Wedge-tailed Eagle *(Aquila audax)*; the Australian Pelican (*Pelacanus conspicillatus)* on an island in the Coorong; the Mount Lofty foothills with the White-backed Magpie *(Gymnorhina hypoleuca)* and a River Murray setting with Brolgas, or Native Companions *(Grus rubicundus)*.

Rookery of the Pied Cormorant (*Phalacrocorax varius*) in Mangrove Swamp, St. Vincent Gulf
Diorama in South Australian Museum, 1939

Wedge-tailed Eagle (*Aquila audax*) in Flinders Ranges
Diorama in South Australian Museum, 1940

Six smaller dioramas display, in more restricted surroundings, other South Australian birds. All of these cases are lighted with concealed fluorescent tubes.

Installation of some of the dioramas entailed preparation of a great number of artificial leaves. Implementing a method advocated by Frank Tose, hinged moulds were made of the two sides of various leaves of plants and from them replicas were reproduced; this occupied a great deal of time. Eventually there resulted an interesting link between the children's museum and the dioramas; we called for volunteers to press out leaves and the response was more than gratifying, teams of girls working on the project each afternoon after school hours.

Visitors grants were made available by the Carnegie Corporation to the Ethnologist, N. B. Tindale, and the Director. Tindale travelled to America and Europe from June 1936 to March 1937; he studied Australian ethnological material in overseas collections and made notes on all those types not known, or rare, in Australian institutions. The Director in 1939 spent several months in the United States and Canada, paying particular attention to research centres at universities and museums, the efforts of the last-named in child education, and aspects of administration. He was visiting the British museums at the outbreak of the Second World War. It is scarcely necessary to add that both officers paid particular attention to methods of display in museums and recorded useful data in long reports to the Board.

On December 29, 1938, the famous H. G. Wells was in Adelaide *en route* to a Science Congress; having a day to spare he spent this in the Museum and at the Zoological Gardens, between which there has been a close liaison since the establishment of the last-named in 1878.

On this occasion, H. G. Wells was attracted by the innovations resulting from Carnegie Corporation assistance. He also displayed interest in the larger carnivorous marsupials; we could show him only "dead" material of the Tasmanian Tiger and the Native Cats, but at the Zoo he saw living examples of the Tasmanian Devil.

Research in the Field

Between 1928 and 1934 there was very considerable acceleration in field research from the Museum. We were fortunate in that the Morgan Thomas Bequest lessened the impact of the depression beginning in 1929. The purchasing value of the income available from this source was abnormally high but nevertheless it was necessary to reduce expenses to a minimum.

The major project in 1929 concerned two adjacent sites in the lower Murray Valley, where human remains were associated with aboriginal occupational debris; both are of exceptional interest in that they show

successive periods of occupation. This was particularly evident in a rock shelter at Devon Downs, which contained 12 well defined stratified layers extending to a depth of 6 metres, while at nearby Tartanga, an island between the river and a lagoon, still older camp sites were examined, stratified and consolidated and also with human remains. Four superimposed cultural phases were apparent in the cave excavation, where a pit of 9 square metres was taken out layer by layer by members of the staff. The succession established here has become the classic Australian one; since the days when it was excavated the rock shelter has become sealed by a flow of red sand-drift from the cliff top resulting from the clearing of the *Callitris* scrub from an area adjacent to the limestone cliffs, one of many examples of the futility of clearing some of the loose Murray soils. The sand effectively seals the site until further study of it becomes desirable.

The discoveries in the Devon Downs rock-shelter stimulated examination of other caves and shelters between Blanchetown and Murray Bridge, with useful results.

Between 1930 and 1932 visits were made to Kangaroo Island, Tantanoola, The Coorong, Point McLeay, the River Murray, Paratoo, Orroroo, Mount Compass and Central Australia; expeditions carried out in co-operation with the University are dealt with separately, as also are those conducted by the honorary curators.

For a long time it had been thought that, before the advent of the white man, Kangaroo Island had never been occupied by the Australian aboriginal. Walter Howchin, a remarkably keen observer, discovered eight aboriginal hammer stones on the island during his geological excursions, and in 1922 William Ham, of the Education Department, found a couple more. A further and more extensive find in 1930 served to stimulate the activities of the Museum on Kangaroo Island. It was in November of this year that Richard Grenfell Thomas, participating in an Agricultural Bureau visit to Hawk's Nest, 20 miles scuth of Kingscote, found evidence of an ancient large aboriginal camp, littered with stone implements. This important discovery was at once followed up and recorded by Tindale; extensive investigation of other parts of the island were then carried out and the fact of one-time habitation by the aboriginals firmly established.

In 1931 the limestone caves at Tantanoola in the south-east of the State were being "opened up" as a tourist attraction. We spent some weeks in this and other caves in the area, collecting a large series of bones of Pleistocene mammals.

It was in 1934 that Tindale and other members of the staff excavated the aboriginal occupational debris in Kongarati Cave, near Second Valley. In this were discovered the dried body of a female aborigine in its original kangaroo skin wrappings, fragments of fishing

nets, fire-sticks and bone and wooden implements. This year H. T. Condon visited north-western Victoria in search of birds and data, and also Port Gawler, the River Murray and other places for the same purpose.

Lea's last collecting trip during the year of his death was to the River Murray, which had flooded. He sought insects along the flood margins.

The South Australian Government, in 1934, appointed the Museum Director as one of the members of a Royal Commission of three deputed to report on the fishing industry and fish marketing in the State. Reginald John Rudall, M.P., later to become Minister, was Chairman, and Ernest Albert Sheridan, a professional fisherman of wide experience, became the third member. The whole of the occupied coast-line of the State and the River Murray from the Victorian border to the mouth was traversed during this and the following year.

This was the second Commission appointed to investigate the important matters involved, the previous enquiry having been instituted in 1907.

Some of the recommendations of the 1934-5 Commission have been carried out, resulting in increased production. Notably, research is being systematically conducted, while the South Australian Government has invested in improved port facilities and in other matters relating to the industry.

The Board for Anthropological Research at the University of Adelaide had been established because of a growing concern that after another generation had passed aboriginals not seriously affected by contacts with Europeans would be difficult to find in Central and northern South Australia, particularly after the extension in 1929 of the north-south rail head to Alice Springs. Furthermore, with the northern extension of the railway and the advent of motor trucks in the interior, travellers did not meet the difficulties experienced by previous parties. The period covered by expeditions organized under the aegis of this Board was in fact almost the last during which ethnological collections, with authentic data and uninfluenced by our cultures and materials, could be secured from the tribes of these areas. Most of the members of the Anthropological Board held office as honorary curators at the Museum; two members of the permanent Museum staff—Tindale and the Director—are still representatives on the Board. All ethnological material obtained during the course of expeditions by this Board is incorporated with the Museum collections, as well as thousands of still photographs and positive copies of cinematograph film.

Gramophone records of song and dialect were made, and by the close of 1939 approximately 15,000 feet of 16 mm. film had been secured, illustrating *intitjiuma* and initiation ceremonies, social life, making of implements and other activities. All these data are especially valuable,

as the ethnological specimens are fully documented in a manner not usually possible in those obtained indirectly. Even amongst the almost completely detribalised Aranda natives, were secured ceremonial and totemic objects *(waninga* and *tjurunga)* and we were interested to find that there were more than 50 designs in the "cat's cradles" of the children. The Museum collection of *tjurunga* alone now numbered about 1,000.

Dr. Ales Hrdlicka, of the Smithsonian Institution, when examining the human skulls in the Museum in 1925, had suggested that we should attempt face-casts (or "life-masks") of Australian aborigines, in order that permanent records of the features would be available for future investigators. He advocated the making of such casts with the eyes open, in order to ensure a life-like expression. This entailed careful handling of liquid plaster, as a lachrymal outflow resulting from the slightest irritation might cause it to run into the eyes, an extremely uncomfortable situation for all concerned. Tindale and the writer experimented on several trusting friends, including T. D. Campbell, who had followed Wood Jones as Honorary Curator of Anthropology at the Museum. Emboldened by some success, we then decided to extend operations to aboriginals in the field, and wonderful subjects these unsophisticated people were.

Our interest was stimulated by the acquisition of a series of life-masks of Eskimo and other races from Dr. V. Suk of Brno, Czechoslovakia. Suk operated in much the same way, covering the face, but only one ear, with plaster in order to avoid locking, which would present complications when the hardened mould was ready for removal. We evolved the idea of including both ears and, before the plaster was fully set, cutting the mould partly through around one ear. This portion was then easily broken off (see upper photograph of plate) as the first step in removal of the mould and because of the jagged surface fitted perfectly back into place; the casting was later extended to busts.

Our first essay in the field was made at Macdonald Downs. It was a scene which intrigued the members of our party, as indeed it intrigued all who took part in anthropological field work during the next decade, for the taking of life masks was extended over a considerable period.

Picture a naked aboriginal immobile on an extemporised platform, eyes fixed on a "sugar lolly" or stick of tobacco suspended by a string from the roof of the tent in order to minimise movement of the eyelids. Two plaster-smeared figures bending over the placid brown man—or woman—only the dark eyes showing at last, glistening through the white of the setting plaster. The latter as it warmed disturbed the head-lice which, brindled, black and yellow, ran over the fabric on which the head of the subject rested. One cannot speak too highly of the co-opera-

Hale and Tindale moulding face of aboriginal in Central Australia, 1931

Plaster face-cast as removed from mould and trimmed

Face-casts ready for exhibition

tion of these people and their obvious desire to assist, although knowing little or nothing of our language and learning our requests through the lips of a native interpreter. The ordeal in the case of the older men at least was probably not very dreadful when compared to the initiation ceremonies experienced during their youth, although it entailed the preliminary removal of all facial hair, including the luxuriant beards.

Skin colours and eyes (using glass replicas) were matched by Campbell, a routine carried out with all natives dealt with on this and other expeditions; these data ensured accurate colouring of the casts. After experience with unspoilt and passive aborigines, face and bust casts were made of more sophisticated individuals on mission stations and in the field nearer Adelaide.

In 1932 some of our facial casts were exhibited at a "Man and his Ancestors" Exhibition in Melbourne, the first time they were displayed in Victoria. Others were sent abroad as exchanges, particularly to Dr. Suk, in return for the casts previously supplied by him.

The base camps of the combined University and Museum expeditions covered a wide field. Koonibba in 1928; Hermannsberg in 1929; Macdonald Downs, 280 miles north-east of Alice Springs, in 1930; Cockatoo Creek, about 200 miles north-west of Alice Springs, in 1931; and Mount Liebig, 280 miles west of Alice Springs, in 1932. The base for the 1933 expedition was Ernabella, 300 miles west-north-west of Oodnadatta; prior to the arrival there of the party, Tindale and Dr. Cecil Hackett of the University had spent three months in the Mann and Musgrave Ranges, following the nomadic aboriginals and carrying out anthropological work; they secured much data, and 1,500 feet of cinematograph film illustrating ceremonies and a day in the life of these people.

The main expedition in 1934 was to Pandi, on the River Diamentina, the party travelling by motor across the Lake Eyre Basin and Goyder Lagoon; this year also, Tindale and Hackett spent a few weeks at Ooldea and witnessed several phases of initiation rituals. In 1935 six weeks were spent in the Warburton Ranges by a further expedition led by Tindale, with Dr. C. J. Hackett, Charles Pearcy Mountford, Honorary Assistant in Ethnology at the Museum) and E. O. Stocker of Sydney, who had accompanied several previous expeditions in order to secure the cinematograph records. The Granites in Central Australia was the base of a group of investigators in 1936, and in 1937 a visit was made to Nepabunna in the Northern Flinders Ranges, where we met again, now on a mission station, the remnants of a tribe encountered by Tindale and the writer 13 years before. Some of these expeditions were assisted by grants from the Rockefeller Foundation and the Australian National Research Council in Australia.

Dr. Keppel was impressed with the results of the anthropological field investigations when he visited South Australia in 1935. They served

also to focus the attenion of overseas anthropologists on Australia, and a number of researchers have come to the Commonwealth since the establishment of the Board for Anthropological Research and have worked under the aegis of that body.

A combined Adelaide and Harvard University anthropological expedition was carried out in 1938-9, when Dr. Joseph Birdsell, then of Harvard, spent 14 months in the field with Tindale, travelling over the greater part of Australia. As might be expected, Tindale made an extensive collection of ethnologia for the Museum during the course of this long expedition. Included is unique material of pygmoids of the Atherton Tableland and a series of fossil bones of large extinct marsupials, in association with fragmentary human remains and artefacts, from a site at Lake Menindee on the Darling River. Because of the intervention of World War II this last did not receive further attention until 1953. Tindale brought back 3,000 feet of 16 mm. cinefilm, for use with classes of school children and illustrating natural-history and aboriginal life. Birdsell and Tindale measured 2,458 aborigines and part-aborigines and secured also 4,900 "still" photographs of them.

It had been noticed that, after the South Australian *Animals and Birds Protection Act* became effective, few protected animals found their way to the Museum, excepting when special collecting permits were issued by the Minister concerned. This was either an earnest of the effectiveness of the measure or a fear of repercussions. However, in 1938 an important amendment was made to the Act whereby an accredited Museum authority may give written permission to those willing to obtain desired material for the institution. Needless to say such permits are very much restricted, and are confined to *bona fide* collectors and well-known friends of the Museum; at first offers were made by various persons desiring to collect birds for us during "close" seasons!

The Honorary Officers

Professor Wood Jones left South Australia towards the end of 1927. Although his honorary position at the Museum was that of anthropologist, one of his main interests lay with Australian mammals.

H. H. Finlayson, as assistant in Mammalia, devoted much time to the collections and was appointed Curator to the section in 1930; he is an enthusiastic mammalogist and maintains a large private collection. At no time had there been a full-time salaried curator of mammals at the Museum, it being the policy of the Board to appoint or, during the last 16 years, to recommend the appointment of, an honorary worker for this position. Finlayson has carried out, and continues, many private field expeditions, and the Museum collections have benefited thereby, species previously unrepresented being added as the result of his efforts. During

the period under review, he made privately financed expeditions to Central Australia, many parts of South Australia and its islands, Tasmania, Victoria, New South Wales and southern Queensland.

Towards the end of 1931, L. Reese, af Appamunna, in the far north-west of South Australia, sent to Finlayson a skull and a skin of the Plain Rat-Kangaroo *(Caloprymnus campestris)* an animal long thought to be extinct and previously known only from the three examples sent to the British Museum by Captain George Grey 90 years before. The following year Finlayson made an expedition, of three months' duration, and secured specimens and data concerning the living animals.

Finlayson's well-known book *The Red Centre* was published in 1935. In expressing appreciation of this excellent portrayal of the interior, one cannot do better than quote the final remarks of Wood Jones in his Foreword. "When Finlayson writes of the Centre and its fauna the reader may be well assured that he is reading reality—the reality of a man who knows these things with an unassuming familiarity".

Dr. T. D. Campbell, as Curator of Anthropology, catalogued the skulls and skeletons of Australian aborigines, and in 1928 was instrumental in establishing a case illustrating the genealogical "tree" of man, the various modern and fossil types being represented by skulls or their casts. Campbell is responsible for organization of the larger University-Museum expeditions carried out under the aegis of the Board for Anthropological Research.

After the founding of the Anthropological Society of South Australia in 1926, a few members served as honorary assistants in the ethnological section, some for brief periods, their help being in the main confined to field work. C. P. Mountford, at the present time Associate in Ethnology, began his long years of honorary service in 1935. Mountford has organised and led expeditions to the northern parts of Australia and its islands and has participated in many others. Because of his colour films and his writings, notably *Brown Men and Red Sand* (published in Australia, the U.S.A., England, Germany, France and Spain), as well as his contacts in the United States, Mountford is the most widely known of the amateur Australian anthropologists; during the Royal visit to Australia, Her Majesty the Queen was presented at Whyalla, March 1954, with a copy of the above-mentioned book. Mountford was appointed Acting Ethnologist at the Museum while Tindale was in the field during 1938 and 1939.

The Honorary Mineralogist, Sir Douglas Mawson, continued to supervise the mineral collections in the study cabinets and on exhibition, planning the installation of a case for display of fluorescent minerals. He was busy during this period organizing the British, Australian, and New Zealand Antarctic Research Expedition, leading two cruises of the *Discovery* during 1929-30 and 1930-31. Professor Harvey Johnston participated

as zoologist, supervising the collecting of natural history specimens and publishing a "Biological Organization and Station List" as a preface to the scientific zoological and botanical reports. Subsequently some of the zoological material was described by four of the members of the permanent Museum staff, Tindale, Womersley, Cotton and the writer.

Dr. A. M. Morgan made several short expeditions, at personal expense, in search of birds and their eggs. The first discovery of authentic eggs of the Banded Stilt *(Cladorhynchus leucocephalus)* was made at Lake Grace in Western Australia in mid-winter 1930 and towards the end of this same year a nesting colony was found on an island in Lake Callabonna, then flooded for the first time since 1918. To gather first-hand information concerning this most interesting occurrence, Morgan visited the Lake during January 1931 in company with J. Neil McGilp, a generous donor of birds' eggs to the Museum, and there the two ornithologists collected a large series of egg-clutches for the Museum and data for the preparation of a paper—*The Nesting of the Banded Stilt.*

Morgan died in October, 1934, after having rendered invaluable service to the ornithological section of the Museum for 12 years. John Sutton continued the work, as Honorary Curator of Ornithology, until his death in November, 1938.

Towards the end of his 14 years of service as Honorary Curator of Palaeontology, Professor Walter Howchin had commenced the arrangement of fossils in the north wing—contributing generously to the exhibited material. Special table cases designed by him were supplied, these occupying 90 feet by 4 feet of gallery space. Howchin died in November, 1937, having bequeathed to the Museum his large and important palaeontological collection, together with that of Foraminifera, as well as literature dealing with them.

Frank K. Godfrey was appointed Honorary Assistant Conchologist in 1938. His most important contribution was collaboration with the permanent Conchologist, B. C. Cotton, in the preparation of two parts of one of the British Science Guild Handbooks, that dealing with *The Molluscs of South Australia.*

Accessions of Special Interest

It will have been noticed that the field work during this period was predominately anthropological in concept, resulting in the addition of many thousands of specimens to the collections; donations and purchases continued, however, and some are worthy of special mention.

Firstly, much skeletal material was acquired as a result of the co-operation of the South Australian Commissioner of Police, and to this day the Museum is indebted to the ever ready assistance of his department.

The value of the collection was now known to overseas researchers and in the *Smithsonian Miscellaneous Collection* vol. 78, 1926, p. 74, appears

a comment regarding our Australian skull collections:—"The greatest collection of human skeletal material is that of the Museum of Adelaide".

After having spent several years in the Santa Cruz group of islands Dr. C. M. Deland, who remains a good friend of the Museum, presented during the late 'twenties native articles of exceptional interest. One of his most welcome gifts was a coil of the rare feather currency used by the inhabitants of Santa Cruz. The *tavau* or feather money was at the time one of only about four housed in museums; later a somewhat inferior coil was acquired. The "money" is made from pigeons' feathers and the red-breast feathers of a honeyeater, bound to a broad base of vegetable fibre in such a manner that on the outside only the red feathers show. The honeyeaters which supply the precious feathers are caught alive, plucked and liberated. The coil is rolled on two wooden frames and is decorated with beads and pendants of shell.

The most important purchase during 1928 was that of five skulls of Tasmanian aboriginals from Dr. Robert H. Pulleine. The Harold L. Sheard Australian ethnologia were acquired about the same time, as well as a number of smaller collections.

During this same year H. A. Heinrich, then a teacher at the Hermannsburg Mission Station, had been contacted by the combined University and Museum party then in Central Australia. Heinrich was interested in collecting weapons, utensils and ceremonial objects of the tribes in the MacDonnell Ranges, and readily agreed to obtain material if costs were met by the Museum. Our contact and friendship with Heinrich resulted in the acquisition of a large number of selected specimens, including *tjurunga*, some of which on later expeditions were taken again to Central Australia in order to more fully document their significance.

Paul S. Hossfeld was now collecting ethnological objects and natural history specimens in the Mandated Territory of New Guinea. A noteworthy contribution was his discovery in 1929 of fragments of a human skull, probably of Pleistocene age, from Aitape in New Guinea. This later formed the subject of a paper by Dr. Frank J. Fenner, then Assistant Physical Anthropologist at the Museum.

Mrs. Daisy Bates, the "old grandfather" of the natives of Nullarbor Plains, in 1932 presented various aboriginal ceremonial objects which illustrate the rapid adaptations resulting from European contact. One of them, standing about 12 feet high, was constructed of packing cases and two discarded motor car tyres, but the whole *waninga* is decorated with the eagle-down in the traditional manner, human blood being employed as the adhesive. Mrs. Bates, a cultured Irish lady, devoted her life, from 1899 onwards, to the study and well-being of the natives who had gathered and stayed at the Ooldea siding on the rail from Adelaide to Perth.

By this time a number of people in different parts of Australia and New Guinea had offered to act, in an honorary capacity, as buyers of ethnological collections for the Museum. Among the most productive purchasers in the field were H. U. Shepherdson (who continued his efforts in northern Australia for years), K. H. Thomas of Aitape, New Guinea, and T. Vogelsang, of Cooper Creek, the last-named having a place in the Museum as a member of the Attendant staff.

During the year 1933 some good Pacific Island collections came to hand, notably those donated by H. K. Bartlett (Papua), J. Wilson (New Ireland), H. A. Stevens (Bank Island) and Mrs. G. E. Peters (Papua, Fiji and Samoa). The last was worthy of a special exhibition, as it included beautifully carved ebony clubs from Kiriwina, in Southern Papua, a carved drum with lizard-skin head, a hand-turned drinking pottery vessel, rare in Australian museums, and quaint miniature carved figures, including a pig and crocodile.

The African ethnological material was enriched in 1933 by purchase of a further remarkable collection of iron weapons, implements, musical instruments and personal effects of natives of Baringa on the Upper Congo River. Massive brass anklets and necklets worn by women were included, one such set comprising a necklet nearly 24 pounds in weight and a pair of anklets, each of which weighed more than 12 pounds; these had been worn by the wife of a chief. An elephant-tusk horn perhaps may be regarded as somewhat the equivalent of the *tjurunga* of the Australian, as it is considered to be the abode of the ancestral spirit.

It was in 1933 also that 131 fine specimens were received from Elcho Island off the north coast of Australia. For these the Museum was indebted to H. U. Shepherdson. Included were grave posts, coffins, ceremonial objects, and articles used for gathering of food. Of particular interest is a cane fish trap, 6 feet in length, rare in museums and shaped like an elongated cask; this furnishes a further indication that the northern Australian aboriginals received cultural impulses from the East Indies in past centuries. Some grotesquely decorated skulls were also secured; after preparation these are suspended from the neck of the parent or wife of the deceased person concerned, and may be so carried about for years. The first record of such skulls in Arnhem Land probably rests with Matthew Flinders, who reported them in 1803 on Woody Island, in Blue Mud Bay.

Adelaide has been fortunate in that almost throughout the history of its Museum some of its citizens have been active in gathering collections of ethnological material and eventually depositing it for permanent preservation in the Museum. For many years, because of the scattered and relatively sparse population, this was an easier task than obtains today. One of the foundation members of the Anthropological Society of South

Australia, Percy Stapleton, had collected in the field about 250 stone artefacts, large and small, and more than 100 stone axes from various parts of the State. These he handed to the Museum in 1933, the series then being one of the largest that had come as a single donation of similar material. The most striking specimen is a stone axe of Polynesian type from Lake Bonney, similar to one which has been found at Green Point in the same district. The particular interest of such axe-heads lies in the fact that from time to time they have been discovered at various places near the coasts of Australia, notably in the Port Adelaide River and in New South Wales. The presence of this type of implement, made from black basalt, suggests that some of the Polynesians, colonists of most of the Pacific, may have extended their voyages to the Australian coast.

Welcome accessions in 1934 and 1935 consisted of moulds of Tasmanian rock carvings from Mt. Cameron West and other localities presented by our late friend Archibald L. Meston. When these carvings were first discovered, Tindale examined and reported on them to the Tasmanian Government.

In 1936 C. M. Deland was again to the fore, this time with a comprehensive series of specimens he had secured in the Pacific, mainly from Bougainville Island. Australian ethnologia were purchased from the estate of Dr. Robert H. Pulleine, who had been a keen collector of aboriginal objects for years. Part of this collection was exhibited at the Centennial Exhibition of the State towards the end of 1936, during which year surviving members of tribes of southern South Australia were asked to make "old style" implements, basket ware and other objects; so encouraging were the results that the project was pursued as long as the aboriginals concerned were alive.

Most of the additions of recent marsupial material resulted from the efforts of H. H. Finlayson, already referred to in the section dealing with the activities of the Honorary Curators. The Museum is indebted to him for specimens of the rarer mammals of the interior, notably the Plain Rat-Kangaroo *(Caloprymnus campestris)*.

Between November 1928 and February 1939, no fewer than 13 Beaked Whales (Ziphiidae) were cast ashore in the vicinity of South Australian coastal townships and so were reported to the Museum. Skeletons of some, and the skulls of the rest, were collected by the Director and his staff, excepting one from Streaky Bay on the west coast, of which the skull was secured by R. L. Bebbington for the Museum. Ten of these were Layard's Beaked Whales *(Mesoplodon layardii)*, a species first recorded from South Australia by Waite in 1922. Haast's Beaked Whale *(Mesoplodon grayi)* was found on the beach of the Coorong and the skeleton was recovered; previously this species was known in South

Australia only from part of a lower jaw. A specimen stranded alive at Port Victoria proved to be a fine adult male of the rare Southern Bottle-nosed whale *(Hyperoodon planifrons)*. This was the first time the animal had been seen in the flesh and the skeleton (mounted in the Museum) was the only complete one then known.

A Porpoise Whale *(Berardius arnuxii)* was seen alive at the northern end of St. Vincent Gulf in 1936 and eventually became stranded on the wide flats, from whence we secured the skeleton; this constitutes the first record of the species from Australia.

A further rare species, the Pygmy Sperm Whale *(Kogia breviceps)*, came ashore in 1937 at Port Victoria, in Spencer Gulf. In this case a female with a sucking calf and with a foetus *in utero* were recovered. Casts were made of the larger specimens, their skeletons were secured and the foetus was preserved.

In August 1931, a young sea leopard *(Hydruga leptonyx)* over 7 feet in length was shot on the rocks at Granite Island in Encounter Bay; in South Australia most of these strays from the Antarctic have come ashore in the vicinity of this locality. This beautifully mottled specimen was sent to the Museum by the finder, F. J. Frinsdorf, who was impressed with its ferocity.

The collection of egg-clutches of Australian birds was considerably augmented during the decade prior to the Second World War. J. Neil McGilp had spent many years in the far north of South Australia and had gathered a collection which he generously donated to the Museum—a series of more than 2,000 clutches. In addition he offered to continue exchanges with other institutions and collectors. This arrangement, still in operation, is an unusually fortunate one in view of the contacts he had made. Other donors, notably the South Australian Ornithological Association, contributed a total of 1,428 sets.

When the Canning Stock Route Expedition in north-western Australia was being organized, we entered into an arrangement with the Western Australian Museum whereby O. Lipfert, the taxidermist at that institution, was enabled to accompany the party along the route. The South Australian proportion of vertebrate material secured by Lipfert came to hand in 1932 and included were 117 bird skins from a relatively little known area. The most noteworthy purchases were the collection of the late Dr. W. D. K. McGillivray of Broken Hill (1938), comprising 1,972 skins of Australian birds and, two years later, as already noted, 1,066 skins from F. E. Parsons.

Fishes not previously noted from South Australia came to the Museum at this time and were duly recorded in literature, while numerous additions were made to the spirit collections and to the exhibited casts.

A young Basking Shark 10½ feet in length, in April, 1932, became entangled in one of the nets of Walter Rumbelow, a well-known fisherman

at Encounter Bay, and was presented to the Museum, one of the very many donations of fishes made by the Rumbelow family. As the specimen exhibited the curious upturned snout apparent at one stage of development of the fish, a cast was made and hung below the larger example secured by Waite. Robert Limb was specially employed to supervise the task of moulding and casting. The stomach of this specimen contained several bushels of tiny red copepods; the shark obviously had encountered a swarm of these minute crustaceans just before its capture.

Apart from a number of citizens with a liking for entomology, Lea now had many schoolboys in and about Adelaide collecting insects, providing them with poison and spirit bottles and other gear. He continued to press his claims for purchase of collections large and small; the years 1929 to 1931 were noteworthy in that great additions were made to the insects from Papua and New Guinea, while the Coccidae, hitherto a group poorly represented, were increased by purchase of a large named collection.

During the first four years of this period, terminating in the death of Lea early in 1932, over 33,000 insects were acquired by donation, more than 36,000 by purchase and upwards of 15,000 during the course of Museum expeditions. These figures are available because of Lea's unflagging industry in all matters concerning the collections under his charge.

Prior to his appointment to the staff of the South Australian Museum, Lea himself had amassed a collection of beetles, in all about 50,000 specimens and including such a great number of types that after his death it was at once purchased for the Museum.

W. Mules of Adelaide, later to play a part in the initial experiments for control of rabbits by myxamatosis, had many contacts with the Museum, as his private interests lay with the insects; he contributed a large number of species from South and Central Australia, including commensals from ants' nests. One day in March, 1932, he discovered in the Mount Lofty Ranges a new race of rare butterfly *(Ogyris genua)* the only other record of its occurrence in South Australia being that of another race *(O. splendida)* by Tindale from the Flinders Ranges. The Museum collection of Lepidoptera now contained approximately 175,000 specimens.

About the same time L. Wagner, who was collecting in New Guinea for the Museum, found another extremely rare insect. This, a species of Katydid *(Siliquofera grandis)* is one of the few in Australian Museums; the body is as large as that of a small bird and the wing span is about 9 inches. The popular name of the Orthoptera of this group is onomatopoeic.

It was also during March of 1932 that larvae of the Oriental Fruit Moth *(Cydia molesta)* were brought to the Museum and were identified by Tindale; they were found in a shipment of peaches which reached Adelaide from Victoria. This destructive moth has been known in New South Wales since 1914 and is found in the Goulburn Valley in Victoria. The species burrows into stems and twigs of fruit trees and is therefore more or less immune from arsenical sprays. Mr. Strickland of the Department of Agriculture in Adelaide, states today that the identification made in 1932 helped materially in averting a major calamity in the fruit industry of South Australia and led to the tightening up of the regulations governing admission of fruit, with the result that there has been no establishment of this pest in South Australia.

Most of the available important private collections of insects in South Australia had now been acquired. With the advent of H. Womersley as Entomologist, the large and valuable accumulation was not materially increased for years, although sorting and proper storage continue to this day as cabinets are supplied, while various groups are sent for identification whenever specialists are available.

Womersley at once concentrated on his study of the primitive insects and the Acaridae. He soon devoted himself entirely to the last-named mites and commenced acquisition of a fantastic number of species of this economically important group.

In the 'thirties the writer commenced to collect at every opportunity the small burrowing aquatic Crustacea forming the order Cumacea. After several methods of collecting had been tried, an idea was evolved which proved eminently successful; this was based on the fact that the littoral Cumacea are known to migrate vertically towards the surface at night. With the assistance of Keith Sheard, a tow-net was fitted up with a lamp of low candle-power fixed in the mouth; this apparatus was lowered to the bottom and allowed to remain there for about 15 minutes. The hauls resulting, particularly about midnight, were amazing, and soon, through the co-operation of Gilbert Whitley of the Australian Museum, together with Sheard and officers of the C.S.I.R.O., a good representation of species was obtained from the eastern, southern and western coasts of Australia.

One of the finest donations to the conchological section had been made by Sir Joseph Verco in 1926, when he presented the whole of his own collection. A further noteworthy addition was made through the interest and help of Sir Joseph in 1929. Lewis May of Tasmania during his lifetime had gathered together a comprehensive series of the shells of that State, and following his death it was offered for sale. The collection included also other Australian and exotic shells and an important section of the May library. Sir Joseph offered to pay the purchase

price of £500, the Museum to be responsible for transport and supervision of packing; B. C. Cotton went to Tasmania and carried out this task.

Other collections, notably those of Elizah Henry Matthews, and the late Honorary Conchologist, Walter Bednall, were purchased a year or two later. Matthews had been postmaster in a South Australian coastal town, a position which provided ample opportunity for the pursuit of his hobby. Edwin Ashby of Blackwood, who specialized in the study of Chitons, presented his collection of the group in 1932, this being probably the best of its kind in the world. Dr. William G. Torr, who had long been associated with Sir Joseph Verco, also presented his type molluscan material; it was through Torr that Mathews first became interested in conchology.

Amongst outstanding accessions of meteoritic material during this period were portions of the Karoonda aerolite, iron from the Henbury crater, iron balls and iron shale from Box Hole, the great Huckitta pallasite and the Shaw collection of australites.

The story of the fall of the Karoonda meteorite is a fascinating one. On the evening of November 25, 1930, many observers in South Australia noticed an extremely brilliant fireball. A fortnight later Professor Kerr Grant (Kt., 1947) of the University of Adelaide, with G. F. Dodwell of the Adelaide Observatory, visited the locality and made enquiries from local eye-witnesses of the fall. As a result, the site was determined within a radius of a couple of miles and on the third day of searching the meteorite was found, lying in a shattered condition in a sandy wheatfield 2¼ miles east of the township of Karoonda. This aerolite, or stony meteorite, is dark grey in colour, with numerous spherical inclusions and specks of metallic lustre; portion of it came to the Museum, for which Arthur Richard Alderman of the University of Adelaide made a complete chemical analysis. More than 20 years later Alderman succeeded Sir Douglas Mawson as Professor of Geology and Mineralogy at the University.

Public interest was stimulated by the fall of the Karoonda meteorite and early next year it was reported that fragments of meteoritic iron were to be found surrounding several crater-like depressions near Henbury cattle station, situated on the dry water-course of the Finke River in Central Australia. Mawson immediately suggested that the Museum should investigate the reports and Alderman was commissioned by us to make a preliminary survey of the area.

Within an area of half a mile square at least 12 probable craters were located by Alderman, who collected material including hundreds of fragments of meteoritic iron of various shapes and sizes, shale formed by oxidization of the iron, and (resulting from heat of the meteoritic impact) fused and fritted sandstone, and also silica glass formed by fusion of the sandstone.

Acting on the advice of Sir Douglas, made through the Board, the Federal Government at once marked the meteorite area as a public reserve and posted notices warning visitors that no meteorite material was to be removed. Subsequently, the area was declared a Federal Reserve and a measure was passed preventing export of such material without authority. Meanwhile, however, a large quantity of iron from the craters was sent overseas by persons not connected with either Federal or State museums.

An extensive shower of the small glassy meteorites known as tektites fell on Australia at some indeterminate period, but evidently in fairly recent times, as none has been located in deposits of any great age. The type of tektites found over the greater part of Australia are known as "australites". Even as far back as 1855 and possibly earlier they were well known to the gold diggers, who called them button stones. A collection made by W. H. C. Shaw of Perth was acquired during this period; it constitutes the first large acquisition of Australian tektites, containing as it does 3,920 separate pieces, of which 1,993 are sufficiently complete to be regarded as "whole" specimens. With previous and subsequent additions, the South Australian Museum collection now includes about 18,000 examples.

Box Hole Station is situated in the Northern Territory; the iron balls and shale referred to came to the Museum in 1937 and 12 years later an iron, 258 pounds in weight, was acquired from this crater.

The Huckitta meteorite was found in 1938, about 150 miles north-east of Alice Springs in Central Australia. It is unique in that it is by far the largest as well as the coarsest grained pallasite (that is a meteorite composed of both iron and stone) known to exist. The Huckitta example weighed 3,112 pounds and was purchased and presented to the Museum by William Burdett. Thanks to the interest of the Commissioner of Railways in South Australia, a transverse slice was made of this meteorite in the Islington workshops, special diamond studded saws being prepared for the purpose. The polished face of this slice, the largest attempted, shows the large olivine (magnesium-iron silicate) crystals embedded in the nickel-iron.

Parts of other Australian meteorites were obtained by exchanges, as well as tektites from Indo-China, Europe and the Philippine Islands.

At about the time of the finding of the Huckitta meteorite, W. Burdett discovered the humerus of a penguin in the Miocene cliffs above Christie's Beach, about 16 miles south of Adelaide; this was described by Finlayson, who stated that it seemed to be closely related to the New Zealand fossil *Palaeeudyptes antarcticus*. Following this, Burdett established a small trust fund, on the understanding that it be used for the purpose of furnishing awards for the discovery in South Australia of

fossil remains of rare or unknown marsupials, birds or reptiles, in Pleistocene, Miocene or earlier geological deposits, on condition that the material is lodged in the South Australian Museum. Burdett was a noted grower of native flora at Basket Range, in the Mount Lofty Ranges, and was deeply interested in the work of the Museum; he died in March, 1940, and now the garden is maintained by his family.

Autonomy

Since 1884, under the Public Library, Museum and Art Gallery Act and its amendments, the three departments had been under the care and control of a Board of Governors, with standing committees and an administrative section. In 1926 the Audit Department conducted a general enquiry into the administration of the institution and made suggestions for greater efficiency. Seven years later the President of the Australian Council for Educational Research, Frank Tate, C.M.G., I.S.O., M.A., proposed that the Carnegie Corporation be invited to make a survey of Australian libraries. The Corporation in 1934 sent Ralph Munn of the Carnegie Institute at Pittsburg Pa., who with Ernest R. Pitt, Public Librarian of Victoria, prepared a report which was released early the following year. A further report from the Auditor General in 1935 agreed substantially with the findings of Munn and Pitt in regard to library administration. This year Reginald J. Rudall, M.P., presented a long and considered speech to the House of Assembly, urging the establishment of free lending services in the Public Library, as had been suggested in the Munn-Pitt report. Following this, the Government appointed Dr. A. Grenfell Price as a one-man commission to enquire into the matter and he prepared a report, issued in April 1936, recommending extensions of the activities of the Library and suggesting division of the existing institution into three, with a separate Board for each. The following year comments were presented by the Public Service Commissioner, and in 1938 bills were introduced to divide the three departments. *The Libraries and Institutes Act*, the *Museum Act* and the *Art Gallery Act*, all of 1939, became operative on February 1, 1940.

At its final meeting on January 30, the Board unanimously adopted the following gracious resolution:

That this Board, before dissolving, acknowledges the encouragement and assistance extended to it by successive Governments and the public; gratefully recalls its benefactors, and places on record its appreciation of the way in which its officers have assisted to raise to their present status the institutions under its control; and extends its best wishes to its successors.

Board of Governors of the Public Library, Museum and Art Gallery of South Australia, 1939-40

Richard Sanders Rogers, M.A., D.Sc. (Adel.), M.D., and Ch.M. (Edin.), F.L.S. (Lond.) (1896). William Harold Langham, F.C.I.V. (1927*). Alexander Melrose, LL.B. (1928) Sydney Talbot Smith, M.A., LL.B. (Cantab.) (1921). B. S. Roach, J.P. (1918).	Appointed by His Excellency the Governor.
R. N. Finlayson (1929). Professor Thomas Harvey Johnston, M.A., D.Sc. (1934†).	Elected by the University of Adelaide.
Professor Sir Douglas Mawson, O.B.E., B.E., D.Sc., F.R.S. (1934).	Elected by the Royal Society of South Australia.
John Charles Goodchild (1938).	Elected by the Royal South Australian Society of Arts.
Ferdinand Lucas Parker (1936).	Elected by the Royal Geographical Society of Australasia (S.A. Branch).
Arthur Webb Pettit (1931).	Elected by the Adelaide Circulating Library.
Henry Ernest Fuller, J.P., F.R.A.I.A. (1926). Stanley Herbert Skipper, LL.B. (1934). Richard Sutton (1936).	Elected by the Institutes Association of South Australia.

*Also held office for two years, 1923-5.

†Also held office for two years, 1927-9.

The figures in brackets denote year of appointment or election to the Board.

Chairmen (to 1897-98) and Presidents (from 1898-99) of the Board

Charles Todd, Esq., C.M.G., 1884; H. T. Whittle, Esq., M.D., J.P., 1884-85; Ven. Archdeacon Farr, LL.D., 1885-86; Hon. Allan Campbell, M.L.C., 1886-87; C. T. Hargrave, Esq., M.I.C.E., 1887-88; Abraham Abrahams, Esq., J.P., 1888-89; J. M. Day, Esq., 1889-90; David Murray, Esq., J.P., 1890-91 to 1893-94; the Hon. Sir S. J. Way, D.C.L., 1894-95 to 1898-99; the Right Hon. Sir S. J. Way, Bart., P.C., D.C.L., 1899-1900 to 1907-08; W. J. Sowden, Esq., J.P., 1908-09 to 1917-18; Sir William Sowden, Kt., 1918-19 to 1925-26; S. Talbot Smith, Esq., M.A., LL.B., 1926-27 to 1928-29; R. S. Rogers, Esq., M.A., M.D., Ch.M., 1929-30 to 1930-31; H. P.

Moore, Esq., J.P., 1931-32; B. S. Roach, Esq., J.P., 1932-33 to 1934-35; W. H. Langham, Esq., F.C.I.V., 1935-36 to 1936-37; S. Talbot Smith, Esq., M.A., LL.B., 1937-38 to 1938-39; H. E. Fuller, Esq., F.R.A.I.A., J.P., 1939-40.

Museum Scientific and Technical Staffs, 1939-40

Director	Herbert M. Hale
Ethnologist	N. B. Tindale, B.Sc.
Acting Ethnologist (during absence of Ethnologist)	C. P. Mountford.
Entomologist	H. Womersley, F.E.S.
Conchologist	B. C. Cotton.
Assistant in Zoology (birds)	H. T. Condon.
Assistant (part-time, minerals)	Barbara W. Warhurst, B.Sc.
Cadet (insects)	W. B. Hitchcock.
Clerks	Shirley J. Davey. June Coonan.
Taxidermist	A. L. Rau.
Senior Assistant (plaster casting)	J. Conroy.
Assistants (preparatorial)	A. Hay. M.E. McAnna. P. F. Lawson.

Honorary Staff

Consultant	Professor T. Harvey Johnston, M.A., D.Sc.
Curator of Anthropology	T. D. Campbell, D.D.Sc.
Curator of Mammalia	H. H. Finlayson.
Curator of Mineralogy	Prof. Sir Douglas Mawson, O.B.E., B.E., D.Sc., F.R.S.
Craniologist	F. J. Fenner, M.B., B.S.
Assistant Conchologist	F. K. Godfrey.
Assistants in Ethnology	Alison Harvey. R. M. Berndt.
Assistant in Zoology	Keith Sheard.

Following is a summary of the principal Administrative and Museum officers between 1884 and 1940:

Administration:—Robert Kay, General Director and Secretary, 1884-1904; J. R. G. Adams, Principal Librarian and Secretary, 1904-1908, General Secretary, 1908-1919; Hately W. Marshall, J.P., General Secretary, 1919-1940.

Museum:—J. W. Haacke, Ph.D., Director, 1883-84; E. C. Stirling, M.A., M.D., Honorary Director, 1889-1895; E. C. (later Sir Edward) Stirling, M.A., M.D., C.M.Z.S., Director, 1895-1912 and Honorary Director 1913-1914; E. R. Waite, F.L.S., Director, 1914-1928; Professor T. Harvey Johnston, M.A., D.Sc., Honorary Director, 1928-1931; H. M. Hale, Director, 1931-1940.

6

Troublous Times
1940 - 1946

The Museum Board

The Museum Act, 1939, provided for a Board, to be called "The Museum Board," and to consist of five members appointed by the Governor, who also "may from time to time appoint one of the members to be chairman of the Board". The primary responsibility of the Board was to be care and control of all exhibits and other personal property acquired for the purposes of the Museum, with the Director and his staff as the functioning officers under the South Australian Public Service Acts.

The first Museum Board, appointed in January, 1940, comprised:

Professor Thomas Harvey Johnston, M.A., D.Sc. (Chairman)
Professor Sir Douglas Mawson, O.B.E., B.E., D.Sc., F.R.S.
James Hay Gosse.
Thomas Draper Campbell, D.D.Sc., D.Sc.
Richard Sutton, J.P.

James Gosse (Knight Bachelor, 1947) was a Company Director, Chairman of the Zoological Society of South Australia and Chairman of the Fauna and Flora Board controlling the Flinders Chase sanctuary on Kangaroo Island. He was the son of William C. Gosse, Deputy Surveyor General of South Australia, 1875-1881. The business ability of James Gosse and his contacts simplified arrangements for transport of materials and for expeditions. As Chairman of the Flinders Chase Board he was deeply interested in the western end of Kangaroo Island, and he encouraged and assisted financially several Museum collecting trips to this locality.

R. Sutton at the time of his appointment to the Board had retired from a senior position in the Education Department and thus a useful link was formed with the last-named.

The other three members had been associated with the Museum for periods ranging from 17 to 34 years.

The Act having come into force on February 1, 1940, the date fixed by proclamation, the Board held its first meeting five days later. The Director presented a review of the activities of the Museum and a copy of this was sent to the Public Service Commissioner. During the same month necessary formalities were carried out, including adoption of a Common Seal and the transfer of bequest moneys allotted to the Museum under the previous Board.

The administrative offices at the front end of the east wing became part of the Museum, which now occupied the whole of this wing and the northern building. Some reallocation of space was thus possible. Until 1940 the scientific periodicals section of the Museum library was housed in a large L-shaped room, previously occupied by the Director and adjoining the entomological section. These books were now removed to the spacious room used by the previous Board for its meetings and the overcrowded entomological collections were transferred to the vacated area. The Director's office was established in another of the front rooms and there the Board holds its monthly meetings.

World War II

The Board and the staff were faced immediately with the difficulties and responsibilities resulting from the Second World War. At once several necessary tasks were completed; for example, the rearrangement of portions of the Stirling Gallery was accelerated, a small Egyptian Hall was made ready for opening, and all material stored in the fumigation chamber for lack of space was removed to the annex of the Stirling Gallery, and temporarily stored in old show cases. Steel racks had been installed in the spirit room in the ancient Armoury and all material in alcohol still remaining in the main buildings was placed there to await reorganization. Housing of the palaeontological collections bequeathed by Professor Walter Howchin, and not already housed in steel cabinets, was hurried on, but complete incorporation with the other material was not possible because Barbara Warhurst, the scientific assistant in the section, already had taken up duties in connection with munitions productions in Victoria. The Ethnologist, N. B. Tindale, finished preparation of an extensive paper on tribal distribution of the Australian aboriginal, from data obtained during the Harvard-Adelaide Expedition of 1938-39; also, a report by him on the social status of the half-caste aboriginals was submitted to the Government, while a tribal map was put in press, this last to form the basis of future field investigation. Dr. Frank Fenner, Honorary Assistant Physical Anthropologist, completed his important paper on the Aitape fossil human skull and was soon on Active Service in the Army.

In 1941 W. B. Hitchcock of the entomological section was called up for duty in the Australian Military Forces, as also was one of the preparators, P. F. Lawson. Another preparator, M. E. McAnna, and next year Tindale and Condon also, joined the Royal Australian Air Force. John Conroy had retired in 1940 after almost 40 years of work in the Museum, leaving a great many tangible records of his industry.

Archibald Hay now took over some of Conroy's duties. Hay previously had painted many casts for the exhibition galleries, as well as backgrounds for some of the smaller group cases. In April, 1941, he received well-deserved recognition of his artistic ability when he gained the Ethel Barringer Memorial Award, which included a scholarship at the South Australian School of Arts for two years. He submitted an aquatint of the Chateau Rambures, France, which was the headquarters of General Cannan, of the 11th. A.I.F. Infantry Brigade in 1918. This was linked with Hay's Active Service in the First World War.

Miss Gwen Dolores Walsh was added to the staff in 1941 as Artist and Photographer. She prepared many illustrations for the galleries and for research papers. In association with T. D. Campbell she developed a keen perception for worth-while artefacts amongst the stone debris on aboriginal camp sites. She resigned in 1949 to take up a position at the University of Adelaide.

When Japan entered the War in 1941, the Museum Board approached the Minister with a recommendation that a large part of the collections be removed to safer storage away from Adelaide as an air raid precaution. The proposal was immediately approved and the services of the Architect-in-Chief's Department were made available. Followed a search for suitable quarters. The Director, with other departmental heads and Board members, first inspected the wine-cellars scattered in the Mount Lofty Ranges, but for one reason or another these proved unsuitable; finally, following the bombing of Darwin early in 1942, the Government decided that a disused railway tunnel would provide an ideal shelter for the State's most cherished possessions. Cleaned, drained and equipped with platforms and electric lighting for the whole of its length of 700 feet, this proved an efficient and convenient shelter.

Meanwhile, packing of the Museum's collections was proceeding—41 insect cabinets containing most of the type specimens, the greater part of the reserve collection of birds, 600 cases of ethnological specimens, and so on—the whole valued at £94,000 for War Risk Insurance purposes. All, together with some of the rarer exhibited mammals, were soon removed to the tunnel, the whole project being greatly accelerated by the active interest of the Minister (the Hon. S.

Jeffries (Kt., 1953), the Public Service Commissioner, and Lt. Col. George Dorricut Shaw, of Gallipoli fame; Shaw died in August, 1954.

The permanent staff, never adequate, was now seriously depleted considering the work in prospect. Two of the three officers ordinarily available in the preparatorial section were on service and the greater part of the time of taxidermist A. Rau was taken up with routine care of the collections, in and out of the Museum; the honorary officers helped materially in supervision and general attention, for which assistance the Board duly expressed its appreciation.

One man in particular is worthy of special mention—Harold More Cooper. Cooper, between October 1941 and 1954, performed continuous service in H.M.A.S. *Torrens* Naval Establishment, Birkenhead, South Australia, in an honorary capacity, firstly as a rating and then as an officer. During the war years this entailed at times duty up to 12 hours per day and sometimes seven days per week. His service included duties in the Recruiting and Demobilisation Offices and the refitting of small vessels taken over by the Royal Australian Navy for war purposes. In view of this, the other activities of this energetic man are remarkable. For a long time Cooper had been collecting stone implements from the deserted native camp-sites in South Australia and during his field trips had secured much natural history material for the Museum, and further had worked within the institution in an honorary capacity. For example, during 1940-1 he presented many hundreds of land shells from the far north of South Australia, and hundreds of stone implements, preparing as well card-catalogue records of camp-sites. He spent months in classifying, labelling and cataloguing the thousands of stone and bone aboriginal artefacts in the collections. Early in 1942 he was appointed as part-time Assistant Ethnologist and was responsible for the packing and removal of the above-mentioned ethnological material to safe quarters. Almost half of the exhibited specimens on the Stirling Gallery had been removed, and Cooper now turned his attention to rearrangement of those portions of the gallery not previously reorganized; during this the floors of the cases, formerly black, were painted in light colours, thus displaying the specimens more effectively. No official field-work was possible but Cooper made a number of short private expeditions to the far north, the southern districts, and Kangaroo Island, securing an extraordinary number of large and small stone implements; he discovered camp-sites previously not examined, and collected in addition botanical specimens and more land shells. Such unstinting service and enthusiasm entailed considerable personal sacrifice. As he was receiving a salary, not large, from the Museum, he was unable to qualify for pay from the Naval Department and this in later years precluded him from receiving Rehabili-

tation Benefits or other privileges with exception of such war medals as were applicable.

With the threat of attack from Japan, members of the staff soon were busy with preparation of A.R.P. equipment for protection of the interior of the building and its contents, the staff, and the visiting public; much of the equipment was obtained with Museum funds, and after an inspection in May, 1942, the Board considered all arrangements satisfactory.

The next undertaking concerned the Army Education Service and during the following year 100 lectures and demonstrations were given in the Museum, in camps and in hospitals. Some of these dealt with camouflage in animals, reef-life, food-getting in the Australian interior and details of the terrain of some of our country. It was here that field expeditions and the 16 mm. film obtained by University and Museum proved extremely useful. One film, of three reels, was almost in shreds when the Army Education Service activities finally ceased.

The Education Service was well organized and carried out a comprehensive programme; later our efforts were extended to the A.W.A.S. A typical day in the life of the Army women was as follows:

1. A talk by the writer illustrating camouflage in fishes and principles applied in the Navy.
2. A discussion with Womersley on mites and harmful insects.
3. A visit to the taxidermist, A. Rau, who demonstrated preservation methods.
4. Professor J. B. Cleland was heard on human anatomy.
5. At the Zoo the Director, V. D. Haggard, gave some pertinent facts regarding animal life in Australia—

after which the party went back to work in their various departments.

At the request of the Deputy Director of Medical Services, Dr. A. R. Southwood, members of the scientific staff visited the Loveday Internment Camps during March and May 1942 to examine the River Murray, its billabongs and seepage areas, in order to report upon Mollusca, Crustacea and fishes which might act as secondary hosts for various internal parasites, particularly trematode worms, known to have been detected in prisoners of war. In view of the possibility of excreta infecting the local fauna, and thus introducing such parasites into our population, preventive measures were suggested. Keith Sheard (now D.Sc.) as Assistant in Zoology, co-operated with the Director in part of this work and also in enquiries concerning fishing, crustaceans and other marine life. He also was soon lost to the Museum, for in June, 1942, he resigned to take up research in the Fisheries Division of C.S. & I.R. A month or so later, he became Honorary Marine Zoologist to the Museum, an

arrangement which assisted further the happy co-operation existing previously. The close link with the Fisheries Division was maintained during the war, when dredgings and tow-nettings from the waters of Queensland, New South Wales, Tasmania and South Australia were sent to the Museum, where they were sorted and in part reported on. In addition the Museum was used as a base for plankton and sampling of South Australian sea-water, both by Sheard and honorary workers collecting on behalf of the Division.

In 1942 Crustacea were being collected by officers of the Australian tribal class destroyer H.M.A.S. *Arunta* and sent to the Museum. We supplied the ship with the face-cast of an *Aranda* native and also with a Bull-roarer from the same tribe. This last became the token of the *Arunta* and was secured to the bulkhead of the poop above the ship's battle honours. H.M.A.S. *Arunta*, sister ship of *Warramunga* was built at Williamstown, Victoria, and commissioned towards the end of World War II; she proceeded later to Korea and there performed valuable services in action—bombarding enemy shore defences, escorting air-craft carriers and conducting general patrol duties.

In November, 1943, a request was made by the "Army Inventions Directorate" for reports on, and suggested steps to prevent, ship-hull fouling by marine growth; this was particularly important in the case of sea-plane floats. Suggestions, principally from the biological angle, were made by B. C. Cotton as Museum Conchologist and the military authorities expressed their appreciation of this approach to the problem.

During December, 1943, a request for information on possible food supplies in case of shortage was received from the "Department of War Organization and Industry". A suggestion was made by the Conchologist that many shellfish could be canned as food, and a report, covering many edible species found in this State, together with life histories and other information, was submitted. One example cited was the Goolwa Cockle (*Plebidonax deltoides*) living in huge quantities at certain places round the Australian coast. The suggestion was not implemented at the time, a letter in reply stating "that the proposition could only be recommended for consideration in connection with post-war development". Since the war, New South Wales has started the industry and South Australia is following suit.

With limited staff, relatively few additions were made to the exhibition galleries during the war years. Human skeletal material was made readily accessible to classes. Sir Douglas Mawson arranged a special series of minerals of current interest—those associated with the conduct of the war. A large mounted kangaroo was prepared for recruiting purposes and rats for health demonstrations.

Before the days of the motor car, two saddlers in Adelaide exhibited each a dappled horse, originally coming from Germany over 100 years ago. One of these, much the worse for wear, was handed to A. Rau for renovation at the Museum. It required hoofs, mane, tail, harness and repainting. The life-like result, seating "Queen Elizabeth at Tilbury", was used by students of St. Peter's College as part of an historic pageant "This England" to raise money towards the war effort.

In our exhibit of the week case, the famous V for Victory sign was pointed by special displays of Western Australian boomerangs (made on a definite V-shape) and shields painted or carved with the same design.

The Education Department soon expressed a desire that, as far as possible, school children should not congregate away from their class rooms and it was decided that the regular Museum class should be discontinued temporarily. Nevertheless, large numbers of school children continued to visit the Junior Museum and informal talks were given by the three remaining members of the scientific staff whenever opportunity offered. One of the precautions taken was temporary removal of the glass-sided observation bee hives from exhibition; these, always popular with both adults and children, were likely to prove an embarrassment if damaged.

It is worthy of note that the first specimen of the cabbage White Butterfly *(Pieris rapae)* known from South Australia was caught at Murray Bridge in January, 1942, and sent to the Museum for identification by Womersley. The larva of the species is injurious to certain vegetables. It spread from Europe across America to Hawaii, and then to New Zealand, from whence it came to the coastal districts of New South Wales and Victoria about the year 1939; now it had crossed the border into South Australia. Despite attempts to eradicate it in our State it is now well established.

Womersley, as Museum Entomologist, was called upon for many investigations in his particular field. At the request of the Central Board of Health he made a mosquito survey of the Ceduna and Koonibba areas, with special attention to the possible occurrence of *Aedes aegypti,* the mosquito responsible for the carrying of dengue fever. In connection with experiments conducted by the Army authorities he made visits to the south-east of the State to study the tea-tree itch mite *(Trombicula samboni)*, a species described by himself.

Some of the mites on which Womersley had been working constituted, in fact, a war-time problem, in that certain species were responsible for Scrub-typhus and Scrub-itch when troops were operating in New Guinea and the Pacific Islands. Taxonomic research on these centred on

the South Australian Museum, and was carried out in association with officers of the Medical Directorates of the Australian Army and Air Force, the American Scrub Typhus Commission, the Research Units of the American Navy, and the British South-east Asia Command.

Scrub-typhus has been known in Japan for about 1,000 years, and rivals malaria as a medical problem in some parts of New Guinea. Americans estimated that it cost them 200,000 man-days in Dutch New Guinea alone. British troops in Burma and Malaya suffered heavy casualties from the disease.

After the United States entered the war, numbers of American servicemen were for a time in South Australia, not as many as in the eastern States, but at one time a lot, and one recalls some amusing incidents. For example, in the course of A.R.P. work an articulated human skeleton was placed for convenience near the main entrance of the Museum. A group of G.I.'s entered, immaculate as usual when on leave, and one, quickly noting the aforesaid skeleton, came to attention in front of it, gave a snappy salute and remarked, "You're looking a bit thin on it Bud".

A note deserving of record concerns Army relations with the aboriginals of the interior. A direct contact was made in the person of our then Honorary Assistant in Ethnology, Miss Alison Harvey, who was on the staff of the Northern Territory Administration attached to the Native Affairs Branch, and whose routine work was carried out at Alice Springs. Miss Harvey made many enquiries regarding social service measures and labour regulations applied to half-castes, visited Mission Stations and depots in the MacDonnell Ranges and studied aboriginals in native settlements and hospital wards. She expressed the opinion that Army medical attention had excellent results insofar as the natives were concerned and that "the treatment of the aborigines provides an impressively successful and efficient feature of Army control".

Some New Interests

At the first meeting of the newly appointed Museum Board, a letter had been received from the Field Naturalists Section of the Royal Society of South Australia, offering to the Museum unconditionally a large Herbarium formed by the Section. There being at this time no Government Herbarium in South Australia the offer was accepted at once, and thus a new section was established.

Dr. Richard Schomburgk, when Director of the Botanic Gardens (1866-1890), had founded and built up a herbarium in the eastern hall of the Botanical Museum. After his death there had been no continuity

of effort; the herbarium was depleted and later neglected. In 1953 the office of Keeper of the Herbarium was established at the Botanic Gardens and two years later the Museum Board agreed that the Museum collection of plants be handed over to the Board of that Department when accommodation was made available there, and the appointment made.

An assistant was employed to curate the South Australian Museum herbarium, which was constantly added to by interested persons, and by the staff when engaged in field work. In addition the Field Naturalists did more than present their collection; members of their Botany Club offered their services in pressing and naming plant material, services carried out mainly during week-ends.

Professor John Burton Cleland identified himself closely with the work in this section and eventually agreed to become Honorary Botanist at the Museum.

This new interest soon resulted in further acquisitions. In 1907 the South Australian Government had purchased a collection of remarkable water-colour paintings of Australian wild-flowers; these are the work of Mrs. Marion Ellis Rowan (1847-1922), a Victorian flower painter and a lover of nature who travelled over Australia in order to depict the flora of our country. At the same time Alexander George Downer, a South Australian barrister, purchased an additional 20 examples of Mrs. Rowan's work and in 1917 these were bequeathed to the Government. The pictures are each 21 inches by 14 inches and represent 100 different subjects; all had been framed and handed over to the Education Department. Towards the end of 1940 the Minister approved the transfer of these delightful and meticulous paintings to the Museum, as part of the property under control of the Board. They are exhibited on the walls of the entrance hall to the Australian Court, 40 or so being shown at a time, changes being made at intervals.

Then, through the interest of Miss M. Burdett of Basket Range, and particularly Miss Alison Ashby of Blackwood, the exhibition in the Museum of freshly-cut Australian wild flowers was commenced in 1940, and so popular did the innovation prove to be that it has been maintained ever since; adjacent is a varying selection of Miss Ashby's water-colour paintings of flowers, and at the best season of the year fresh specimens of approximately 200 named species are shown. This display would have been impossible without the practical assistance of Miss Ashby, who each week sends to the Museum a carton of cut blooms from her famous Blackwood garden, known to all lovers of Australian flora. Soon after the establishment of the exhibit as a permanent feature she presented her collection of pressed flowers and at about the same time accepted a position as Honorary Associate in Botany.

When the British Parliamentary Delegation was in Adelaide during June, 1944, several of its members visited the Museum, notably Dr. Edith Summerskill, Lord Listowel and Major Sydney F. Markham, who, with Professor H. C. Richards, had surveyed the Australian Museums a decade before; the native flowers attracted the enthusiastic attention of the party. Major Markham referred to the fact that the "Adelaide Museum 10 years ago, from the point of view of public exhibition galleries, had presented one of the most difficult problems in Australia, because it had been arranged on purely scientific lines with little regard for the fact that the average member of the public was neither a Latin scholar nor a scientist". He stated also that in his opinion the change during the past ten years had been remarkable and that he was "particularly impressed with the series of the origin of the Australian man, the Children's Museum, wild-flower tables and bird habitat groups".

It was at the suggestion of J. B. Cleland that an addition was made to the flower display—a "weeds of the month" exhibit. The number of visitors attracted by the array of introduced plants which have become such a nuisance to agriculturists and gardeners astonished us, some people coming at regular intervals to ascertain the names of the seasonal species.

Five years after the establishment of the Museum herbarium, Ernest H. Ising, an enthusiastic South Australian botanist, presented his large collection of plants, one of the most valuable which has been gathered in South Australia, a generous and welcome gift. Ising himself later spent long hours in the Museum, labelling and reorganizing his collection.

Attendances at the Museum remained good throughout the war and at times were greatly increased because of visiting members of the Military, Naval and Air Forces. This also meant many additional enquiries for attention by the depleted scientific staff. A query which once again arose persistently, concerned the method of birth of marsupials—the kangaroo in particular. In 1943 the specimens supplied by Wood Jones were rearranged in a separate case near the front entrance and at the same time a booklet was prepared entitled "The Birth of the Kangaroo"; this, with some amplification, was based on the previously mentioned pamphlet prepared by Wood Jones for private circulation. The revised booklet was displayed for sale at the Zoological Gardens as well as the Museum and it was not long before all copies were sold. A further edition was issued and the sales continue steadily to this day, many thousands of the booklets having been sold.

N. B. Tindale, who had become a Wing Commander in the R.A.A.F., in 1943 and 1944 made small collections of ethnological objects from Markham Valley, New Guinea and the Solomon Islands, during tours of duty with the United States Army.

It would seem that by this time most of the large private collections of ethnological material in South Australia had been secured by the Museum, although a few were still known to exist. A selected series of crude axes and other large stone implements found by L. Kurtze in the Port MacDonnell district had been purchased in 1932. This collector and his son, C. F. Kurtze, possessed a small private museum at Portland in Victoria, and there the writer went in 1944 to purchase a further 3,000 specimens, including cutting tools and axes, from the south-east of South Australia and from Western Victoria.

C. P. Mountford led two small University expeditions to Central Australia in 1938 and 1940 securing further material; specimens collected by persons on Active Service in the Pacific Islands and elsewhere were sent in, and a number of useful, and sometimes rare, minor collections were purchased or donated.

Dr. E. Angas Johnson had been contributing to the ethnologia for a long time. Amongst welcome donations from him there now came a perfect pair of *Kurdaitja* shoes, the best of our series. Angas Johnson eventually donated the whole of his large gatherings of Australian ethnological and mineral specimens.

Few illustrations of the Adelaide tribe of aboriginals are available but in 1944 an important purchase was made of a large oil painting, depicting four white people watching a corroboree at the foot of the Mount Lofty Ranges. This was made by J. M. Skipper in 1840 and its value will increase with time.

Included in the materials from the Kurtze museum was a meteorite taken near Dimboola, an aerolite now known as the "Dimboola" meteorite. In 1941 additional material from the Box Hole crater was acquired and a further part of the Bond Springs irons was purchased in 1942.

The collection of Australian tektites (australites) was added to materially during this period. Mervyn Pens in 1940 presented a further series, amplifying earlier collections made by him in the neighbourhood of Florieton, and during the same year a collection of more than 7,000 specimens made by Constable John W. Kennett was purchased; these, with the assistance of aboriginals, were collected in the area surrounding Charlotte Waters, in the Territory. In 1943 a valuable series secured by Francis D. Warren of Finniss Springs Station was donated and other specimens were presented by J. E. Johnson of Moonta. Smaller individual series were obtained from other collectors and it now seems certain that the Museum possesses the most extensive and representative collection of australites extant.

J. E. Johnson in 1942 presented the whole of his extensive and valuable collection of named and catalogued minerals, mainly Australian in origin and principally from Wallaroo, Moonta and Broken Hill. The gift from this diligent and well informed mineralogist comprises the largest single mineral collection ever presented to the Museum. Some of the australites mentioned above had been picked up with aboriginal stone implements on camp sites and had been skilfully chipped by the natives to form small cutting tools, or microliths.

During the year 1945 a good sum was paid for a collection of minerals, rocks and australites which had been accumulated at Kalgoorlie, in Western Australia, during a period of more than 30 years, by Spencer Cook; this includes an extensive range of minerals, among which Western Australian tellurides are well represented. The numerous australites are nearly all from Western Australia and some particularly large ones are included.

The radio-active minerals were augmented by a presentation by R. Fuss of a collection of uranium specimens from Mount Painter, made in the early days of radium mining in South Australia by his father, Charles Fuss. A few years later uranium was to loom large in the affairs of South Australia.

The Premier, the Hon. Thomas Playford, was pushing the development of the Leigh Creek coal field; samples, as mined, were exhibited and the public informed that this is a sub-bituminous coal of far greater fuel value than the much used brown coal of Victoria.

In 1940, discussion on the occurrence of the Platypus *(Ornithorhynchus anatinus)* in South Australia was revived, a further specimen having been received from the lower River Murray some time before; a few years later still another was sent in from Berri, where like several others it was trapped in a drum-net.

On October 5, 1944, one of the most extensive strandings of whales in history occurred in South Australia. It was reported that a great number of "large fish" or "sharks" had come ashore at Port Prime, on the east coast of St. Vincent Gulf and approximately 30 miles north of Adelaide. Because of petrol restrictions, no vehicle was available at the Museum but some of us were able to make a necessarily brief visit to the place on the following day; this was made possible through the courtesy of the Editor of the Adelaide *News*, to whom the writer is indebted for the accompanying illustration. The party consisted of Harvey Johnston, B. C. Cotton with the Museum cinema-camera (left figure in photograph), and the writer.

On arrival we were confronted with the sight of more than 200 Blackfish or Pilot Whales *(Globicephalus ventricosus)* scattered on the tidal flats. Most were dead, some were still breathing and a few had energy

enough to thresh their tails, so forming deep hollows in the sand. The hot summer sun had raised blisters on the black skin of even living specimens and the unfortunate mammals must have suffered torture until death relieved their distress.

Blackfish or Pilot Whales (*Globicephalus ventricosus*) stranded at Port Prime, South Australia, 1944

At Port Prime the tide when ebbing recedes from the low fringing sandhills for a distance of about two miles. A deep channel leads into the sand flats and it is possible that the whales followed inshore this "run" (the term applied to such channels by South Australian fishermen) and so, because of the rapid fall of the tide in the upper reaches of the Gulf, came to grief on the flats.

Cotton's interest, apart from pictorial records, was centred on the fact that toothed whales feed largely upon squids and cuttlefish, which form part of his studies. We made measurements and notes, and Harvey

Johnston searched the digestive tracts of a couple of specimens for parasitic worms.

The photograph here reproduced shows a small section of the beached whales at Port Prime. A few days later it was discovered that a further 50 specimens were stranded a mile or two north of the main herd, while isolated examples were reported along a 20-mile stretch of beach between Port Parham and Gawler. For a while the decomposing whales presented a problem, but eventually they drifted away on a high tide.

On V.P. Day (August 15, 1945) a Green Turtle *(Chelone midas)* was captured off our south-eastern coast, the first occasion on which this northern species had been seen alive in South Australian waters, where only two other species of marine turtles have been taken. The Luth or Leathery Turtle *(Dermatochelys coriacea)* is not uncommon, and not long before, as on several previous occasions, one of these giants, 6 feet in length, had become entangled in the line of a crayfish pot. The Loggerhead *(Caretta caretta)* is known to South Australia only from a single specimen collected at Port Noarlunga by our friend, Dr. Cecil Hackett in 1924.

The Molluscan collections were added to by interested persons in the Forces, particularly C. M. Deland, who early during the war was stationed in New Guinea. Noteworthy was a large parcel of shells gathered near Admiralty Island. The Rev. H. K. Bartlett forwarded a large consignment of land snails and freshwater shells from Rossel and Brooker Islands, while the captain of a ship travelling between Australia and New Zealand was another contributor; by dredging, the latter obtained shells and marine animals, which he preserved in a refrigerator until they reached Adelaide.

Post-war Planning

The Hon. S. Jeffries retired as Minister of Education in 1944 and the Board expressed to him its appreciation of his active and helpful interest in the Museum during the difficult war years. The portfolio was now given to the Hon. Charles L. Abbott.

After the tide of war had turned, thoughts went to the future. The large and valuable collections which had been stored away from the city as an air raid precaution were returned to the Museum. The reinstallation of this material emphasised the urgent need for more storage space and for more cabinets and other containers.

Hopes ran high for a long-awaited extension of buildings, the previous 30 years constituting the longest period in the history of the Museum during which no additional accommodation had been provided; none of us could foresee then the post-war housing problems which were to arise.

The Chairman of the Board and the Director attended a meeting of the Art Galleries and Museums Association of Australia and New Zealand,

early in 1944, when administrative and other matters pertaining to these institutions were discussed. The lay-out of proposed post-war buildings was considered with a view of modern requirements. It was agreed unanimously that the questions of adequate staffing and the status of personnel were deserving of the most serious attention as soon as conditions made this possible.

Amongst the programmes envisaged in Adelaide was a considerable extension of the Children's Museum.

In a report to the Government, the South Australian Museum Board emphasised

the urgent need for extension of Museum buildings and of adequate staffing. Even the existing accommodation is far from satisfactory. People who constantly use the facilities of the Museum for classes and so on, complain regarding the uncomfortable atmosphere of the buildings in winter. It says much for the wide interest of our exhibits that during the cold season members of the public should have sufficient enthusiasm to visit our frigid and inadequately lit galleries. Attention has been drawn to these matters before . . . . Lack of adequate exhibition and storage space became acute years ago, and the position is now extremely unsatisfactory. The vast amount of material under the care of the Board is not receiving the attention it deserves because of makeshift storage facilities and because of lack of staff. Exhibition space is so limited that justice cannot be done to displays illustrative of our fauna and of our aborigines. There is, for instance, no room to exhibit our remarkably good collection of insects and of Mollusca. Only a small proportion of the birds occurring in our own State can be shown. A gallery for fishes and another for reptiles is desirable, and so on. Particularly one may mention our ethnological collections which could be made a feature of a new Museum. Many of the 40,000 objects of this collection were secured years ago, and today it can be said that literally some of them are worth their weight in gold. Some of the material from the Pacific Islands for example cannot be duplicated. Portion of it is displayed in the old red brick Museum, but necessarily the specimens are placed close together in the cases with the idea of affording safe housing for as much of this valuable material as is possible. To the public such an arrangement is meaningless and these stored specimens alone could be spread out to fill a very large hall so as to illustrate by means of labels, maps and photographs, the life and interests of the Pacific peoples. This and other projects cannot be considered until vastly more floor space is available. To allow for immediate extensions and to cover requirements for the next half century, it is estimated that 60,000 square feet of additional floor area is necessary.

The Board waited on the Minister and discussed the possibility of extension of the Museum, to occupy the central position of the plan formulated in the seventies. It was pointed out that when the Public Library, Museum and Art Gallery had become Government Departments in 1940, the existing buildings were placed under the care and control of respective boards but that unoccupied areas had reverted to Crown Lands.

7

The Last Decade
1946 - 1956

Readjustments

In response to previous representations of the Boards of the Library, the Museum, and the National Art Gallery, the Governor's Deputy in 1948, under the provision of the Crown Lands Act, dedicated land to be under care of the respective bodies. The sketch reproduced on p. 187 shows the position of the various buildings referred to in this history. Lean-to work rooms were erected at the rear of the old Armoury in 1955, but apart from this no additions have been made to the buildings for more than 40 years, although a considerable sum has been spent on storage facilities and alterations to exhibition galleries.

Land dedicated to the Museum Board is hatched in the accompanying plan, which is not to exact scale; this central area is flanked on the west by lands dedicated to the Public Library and on the east by those allotted to the National Art Gallery.

The buildings allotted to the Museum Board are cross-hatched in the plan, which serves to show also the sites of the strange assortment of buildings and temporary structures to which the Museum has fallen heir and illustrates an obvious administrative disadvantage—the necessity for accommodating some of the staff and collections in scattered outbuildings, some a century old.

It will be noted that the macerating house (the 1861 Gas House and its later addition) is situated on Library lands, as also are the whale sheds and the fumigation chamber. Museum outbuildings on the other hand are occupied in part by the Children's Library (ground floor of old Police Barracks) while as a "temporary" expedient a structure to house the Country Lending Service of the Public Library was erected in 1942 on land dedicated to the Museum six years later; an addition to this was completed in 1949. There is some overlap of occupation in the case of the National Art Gallery also.

The present Minister of Education, the Hon. Baden Pattinson, has visited the Museum on several occasions and has discussed the needs of the institution with members of the Board and the Director. In October, 1954, members of Parliament, in response to an invitation of the Board, inspected the Museum and the ancient outbuildings; such inspection was considered desirable by the Board in view of the increasing use of makeshift accommodation for important collections and the necessarily scattered housing of staff.

Changes in the personnel of the small Museum Board have occurred during the last six years. Richard Sutton died suddenly in August, 1950; Cabinet appointed Vincent D. Haggard, Director of the Adelaide Zoo, to fill the vacancy, thus establishing a still closer link between the two institutions.

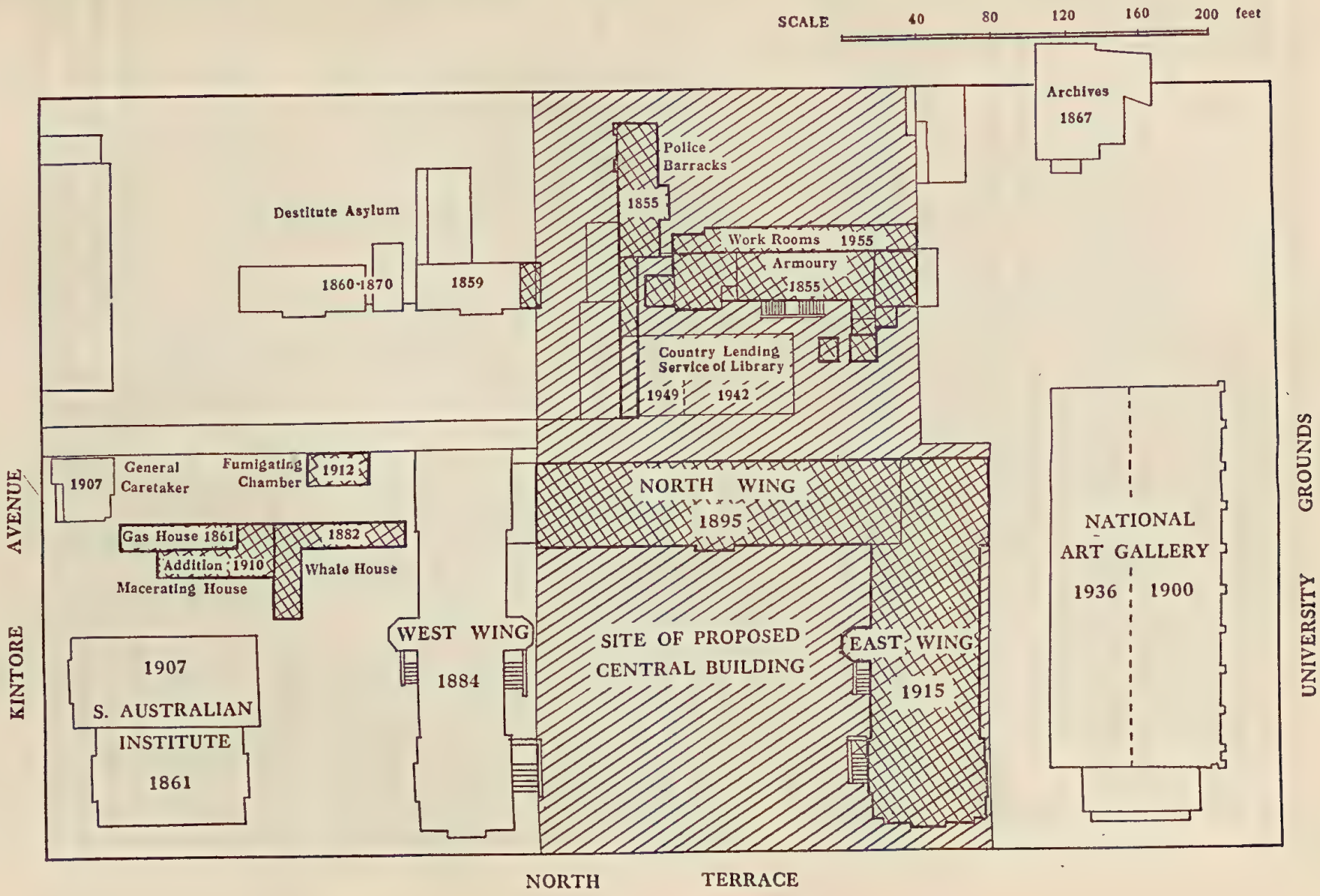
A year later a severe loss was suffered in the death of T. Harvey Johnston, not long before the date of his retirement as Professor of Zoology at the University. The Government then sent in his place C. Warren Bonython, son of Sir Lavington Bonython and a young man already with a background of scientific research. At the same time Professor Sir Douglas Mawson was elected by Cabinet as Chairman.

In 1952, again during the month of August, Sir James Hay Gosse passed away, and thus the Board lost a sound adviser on financial matters and, as already mentioned, a keen supporter of any projects connected with Kangaroo Island, the sanctuary on which became one of his main interests during his latter years. Soon Mrs. Elizabeth Robson Simpson, a daughter of Professor J. B. Cleland, took his place.

The list of Honorary Curators was extended by the appointment of Professor A. A. Abbie to co-operate as Physical Anthropologist with T. D. Campbell (who became Professor of Dental Studies at the University of Adelaide in 1954), and of Dr. F. Martin Glaessner and Dr. R. V. Southcott as Associates in Palaeontology and Acarology respectively.

The inadequacy of the curatorial staff in relation to the collections had been evident more than ever during World War II. The position of Assistant in Mineralogy and Palaeontology had remained vacant since early in 1940 and at the close of the War the Board informed the then Minister (the Hon. R. J. Rudall) that the mineralogical collection was still suffering from the want of a full-time curator in this section of the Museum's activities. Dr. Charles Fenner, who had retired from his position of Director of Education, was then added to the staff, occupying a position in the palaeontological section, while William Rex Riedel, a science graduate from Adelaide University, filled the office of Assistant in Mineralogy and Palaeontology early in 1947. Riedel left Adelaide in 1950 to pursue in Sweden his studies of the Radiolaria. His research in Europe was recognised by the Royal Society of London, and with the aid

LANDS AND BUILDINGS OF PUBLIC LIBRARY, MUSEUM AND NATIONAL GALLERY OF SOUTH AUSTRALIA



of a grant from the last-named as well as a Fulbright scholarship he worked for a further year in Massachusetts and in the Scripps Oceanographic Institute of California.

Dr. Fenner at once plunged with enthusiasm into the work of registration and cataloguing of the invertebrate fossils and also the australites, of which he made a particular study. He arranged and labelled a teaching series of fossils and, as a former teacher and Director of Education, he was naturally an excellent mentor to parties of school children in the Museum. He retired at the age of 70 in May, 1954, and died a year later after a long illness; among the last of his activities were preparation of a separate register of the Australian tektites in the collection and a paper describing some recent additions.

Francis John Mitchell commenced work at the Museum in 1946, his main concern being with the reptiles and frogs. Gordon Flinders Gross became Assistant in Entomology in 1947 and Assistant Entomologist in March, 1951. Trevor Dennison Scott, like Riedel and Gross a science graduate from the University of Adelaide, took over the position of Assistant in Marine Zoology early in 1951.

Riedel was reappointed to the staff in 1954 to fill a newly created permanent office, that of Palaeontologist. In June, 1955, however, he resigned in order to continue his research at the Scripps Oceanographic Institute. Towards the close of the same year Brian Daily, B.Sc., was appointed Museum Palaeontologist, and soon commenced a re-organisation of the older fossils, being interested particularly in the Cambrian deposits.

Womersley continued in field and laboratory his taxonomic studies of the superabundant mites. Early in 1947, having received a substantial grant from the United States Public Health Department, he left for 12 months to study the collections in other institutions and to confer with specialists in the United States and England. The above-mentioned grant assisted in publication of Womersley's *magnum opus,* a monograph of some Acarid mites—"Trombiculidae of the Asiatic-Pacific Region" which occupies the whole of volume X of the *Records of the South Australian Museum,* comprising 674 pages and including 118 plates.

After his retirement in 1954, and before resuming work at the Museum as Honorary Acarologist, Womersley spent some months in New Guinea with his son John S. Womersley, Forest Botanist in the Forestry Department of New Guinea at Lae. Towards the close of 1955 he was appointed as salaried Acarologist—a new office.

In March, 1955, Dr. Edward Thomas Giles became official Entomologist at the Museum. A New Zealander, he had just completed a post-graduate course at the Imperial College, London, there securing his Ph.D. He worked particularly on the morphological affinities of the Dermaptera

to the Orthoptera, as he intended to further pursue his investigations of the last-named order of insects.

Amongst the post-war suggestions for improvement was the proposal that curators in charge of the larger sections of the Museum should be supplied with independent clerical and other assistants; this was implemented in 1947. Some changes in personnel of the preparatorial staff occurred, while in addition to the artists a modeller was appointed for preparation of gallery exhibits—a most successful introduction.

Some Innovations

At the beginning of this period members of the staff who had been on Active Service returned and by mid-1946 work on the exhibition galleries was resumed.

Paul F. Lawson, one of the preparators, carried out numerous experiments with plastics as media for replicas of objects for display. Using rubber latex and Polyvinyl-chloride he produced life-like representations of frogs, lizards, snakes and other creatures, infinitely superior to spirit or "stuffed" specimens. He also developed and published a description of "Methods of Demonstrating Human and Mammalian Circulatory Tracts."

As mentioned earlier, E. Burgess, of Kangaroo Island, in 1926 collected bones of the extinct small Island Emu *(Dromaius diemenianus)* in the Kelly Hill Caves discovered by him; these included a complete skeleton. Sir James Gosse, Chairman of the Board controlling the Flinders Chase Reserve on Kangaroo Island, as well as member of the Museum Board, suggested that from our available skeletal material and from data concerning the mounted skin in the Paris Museum (the only one in existence) it might be possible to prepare a reconstruction of the dwarf emu as it appeared in life. The Director of the Paris Museum generously supplied photographs showing plumage and other details and Lawson was entrusted with the task of reconstruction. A field trip was made in order to secure a mainland emu with plumage corresponding in colour to the dark Island species and then, with the skeleton as a guide to proportions, the mannikin was built, using Polyvinyl-chloride for the head, legs and feet.

It will not be disputed that an important factor in Museum display is the first impression a visitor receives when entering the doors. Not very long ago most of the museums in Australia presented to the public vistas of black cases. Most, if not all, of our museums have changed the colour of the framing of their exhibition cases, a long procedure and an expensive one. In the case of the South Australian Museum, arrangements were made for some of the attendant staff to carry on with painting whenever practicable. It was, of course, essential to ensure that from time to time persons with experience in painting were added to the

attendant staff and the scheme has proved eminently satisfactory, due to the enthusiastic co-operation of this section of the personnel.

It was considered that in the matter of public education we could stress the desirability of protecting our native animals and plants. As a beginning a case designed by the Ornithologist, H. T. Condon, was installed by A. Rau and his assistant, showing the game birds of South Australia and drawing attention to the fact that ducks, snipe and quail, and their allies, together with the Bald Coot, are recognised as important game birds and that, owing to closer settlement, drainage of swamps and subsequent loss of breeding grounds, legislation is necessary to ensure that these game birds are not exterminated. It is shown that, for instance, only 40 quail may be taken by one person per day, and that the daily bag limit for ducks is 12 per person. Specimens of each of our ducks, snipe and quail are mounted against a pale green background, each with a map of Australia showing the distribution of the species, and a label giving the alternative popular names (as well as the scientific name) and the dates of the Close Seasons. In juxtaposition are displayed the totally protected birds in South Australia, with a copy of the Animals and Birds Protection Act, and a list of all the sanctuaries. Public interest in this display indicates that such "protectionist" information could usefully be extended and emphasised.

Apart from dioramas, the bird gallery still had on exhibition the group case arranged during Waite's term as Director. Waite on arrival in Adelaide was faced with a number of square cases about 12 feet by 12 feet by 8 feet in height. The contents constituted what perhaps may be called "pseudo-dioramas"; an appropriate background was painted on the wall, some ground work and trees were installed, and on these were placed, for example, all South Australian water birds, parrots or hawks, in different cases of course. Under this scheme each bird has a number and a key label is attached to the outside of the case. Two irritating factors arise. To ascertain the name of any particular bird it is necessary to look from the bird to the key label; secondly, in an exhibit of this type the birds are not always displayed to the best advantage and it is difficult to study closely details of many of them. Condon, in collaboration with taxidermist A. Rau, and artist H. Bowshall (who came on the staff in 1950) carried out some great improvements on these old cases. False backs were installed on three sides, the result being in effect three upright cases, not very deep from back to front, two at right angles to the other. In two of these modified cases South Australian hawks and parrots are mounted against backgrounds painted pale blue, with indications of cloud. In the case of the hawks each species is accompanied by a cut-out small painting showing the underside as seen in flight.

A major undertaking during this decade was preparation of an "Indonesian Hall" fully illuminated with artificial lighting and occupying

the southern third of the top floor of the east wing. It was opened by the Director of Education in 1954 and has attracted so much public attention and approval that some detailed description is warranted. The Hall was designed to illustrate the earlier cultures of man and also more modern collections from South-eastern Asia. The last-named series have been arranged to show the origins of civilized man and his development through the stages of neolithic agriculture and the early Iron Age in the lands of South-west Asia.

As a departure from the conventional approach to the subject of early civilizations in which the cultures of the near East, and in turn Egypt, Greece, Rome and modern Europe are successively displayed, an attempt was made to indicate the principal cultural sequences which have affected areas between South-western Asia and the Pacific, treating in turn the Indus Valley cultures, India, Malaya, Eastern Asia, Indonesia and the Pacific Islands around Australia. Because of the difficulties in obtaining an adequate number of specimens to illustrate the archaeology of cultures such as that of the Indus Valley, appropriate reproductions and models in clay were made. These, based on published photographs and drawings, are used in place of specimens which are not available. The three dimensional replicas properly coloured are effective in demonstrating details of designs on Harappa pottery, the general appearance of Indo-Sumerian clay figures, and such objects as the toy model carts and children's toys as were found, for instance, at Mohenjodaro. Care is necessary to ensure that the student knows that he is viewing a reproduction or model and not an original. The advice once given by the late Dr. George C. Vaillant of the Pennsylvanian University Art Museum has been taken seriously; he postulated that often a carefully and scientifically made reconstruction or copy of the best available specimen is far more effective in educating than is a second-grade or broken fragment of an original.

Included in the Indonesian Hall is a feature not hitherto adopted at the South Australian Museum—the preparation of miniature dioramas based on a scale of 10 cm. equals 1 metre. The artizan now available on the staff, Leonard V. Wills, an excellent craftsman, constructed a new type of case in which sloping glass is used, but so built-in that there is no effect of looking into a picture frame. This case has been constructed on a triangular base to enable it to be placed with one side against a wall; the third side carries photographs in a shallow frame, glassed but independent of the outer case. Miniature dioramas are made portable so that they may be replaced in a few minutes. To enable adjustments to be made in lighting for different scenes the fluorescent light sources are on movable cradles and may be shifted readily from side to side within the outer case of the diorama.

The creation of this considerable exhibit occupied the services of seven members of the staff, under the supervision of the Anthropologist (N. B. Tindale), for more than two years; the idea for the gallery had grown out of his experience in the Orient and the inspiration of visits to leading museums in the United States and Europe. Harold E. Burrows as museum assistant personally installed and printed labels for most of the smaller cases. Harry J. Bowshall (artist) and Madeleine P. Boyce (artist and photographer) painted large murals and prepared photographs and many other illustrations. Quintin G. Harris, as modeller, is responsible for the miniature dioramas. Harris has modelled small aboriginal figures (one-sixth natural size) for the Australian ethnological gallery also; one series, arranged to depict a ceremony of the *Pitjandjara* tribe has evoked favourable criticism.

Paul F. Lawson made an outstanding contribution by preparation of life-size figures of a Maori Chief and his daughter, the latter seated on the doorstep of a house. These figures display effectively the clothing and decorative articles worn by the original inhabitants of New Zealand.

The Indonesian Government at Djakarta, through the Department of External Affairs at Canberra, made a generous donation of Balinese dancing costumes to assist the project. These comprise a complete outfit for a "Legong" dancer, suitable for wearing by a girl of about 11 years of age as well as the principal items of a "Djanger" dancer intended to fit a young woman of 16-18 years; sketches showing the mode of dressing accompanied the specimens.

The Conchologist, B. C. Cotton, with the aid of his artist-assistant, at this time arranged in table cases an extensive teaching series of Mollusca, illustrating life-histories, types of shells and colour sketches of the whole animals. This attractive exhibit replaced study collections of shells now available with other material, in the conchological cabinets.

So numerous became enquiries regarding the common Mollusca of our southern shores that Cotton prepared a booklet intended for the beginner, school children and teachers; it is well illustrated and covers 226 species common to South and Western Australia. The first edition of "South Australian Shells" was published early in 1946, when the Education Department at once purchased 1,000 copies; two further editions have been issued to date.

A constant demand for euphonious aboriginal words, or the meanings of aboriginal words, led to the preparation by H. M. Cooper of a selected "2,000 Australian Aboriginal Words and their Meanings". This also soon ran into a second edition, and is still in great demand despite, as in the case of other booklets, an increased cost.

Black and white postcards previously available, and depicting Museum objects, were superseded by a set of coloured cards, five illus-

Maori models, life size, in South Australian Museum, 1949

trating some of the bird dioramas and one of the aforementioned reconstruction of the Kangaroo Island Emu.

Because of numerous public enquiries regarding our reptiles, a popular booklet, "Harmless or Harmful", dealing with South Australian snakes, was prepared by Mitchell; published in 1955, this commanded a ready sale.

A coloured Museum poster, prepared some years before, was displayed by courtesy of the South Australian Railways Commissioner, 200 copies being shown on Station notice boards throughout the State.

From time to time series of articles in the press, focusing attention on selected specimens specially exhibited, attract attention, as also do publicised accounts of the results of field and research work.

With an increasing influx of "New" Australians it was considered advisable to place on the galleries additional general explanatory labels in German and Italian, and appreciation of these has been freely expressed.

It is felt that all these measures have contributed in maintaining annual attendances during the last few years at an estimated level of about one-fourth of a million, an excellent attendance in relation to the population of the State.

Soon after the war the Board referred again, in its annual report to the Government, to the educational work carried on with school children. It was pointed out that for many years school classes have absorbed much of the time of curators and technical staff "thus inadequately employing the specialized qualifications". The Board felt that after this lapse of time and considerable effort "a definite decision should be made as to whether this activity shall be a recognised function of the Institution with more definite liaison and assistance from the Education Department". Continuing further the idea of utilizing the Museum as a source of teaching material, attention was called to the fact that in many other museums travelling cases were provided for circulation amongst schools; such cases deal with insects of economic importance, bird-life, structure of animals, teaching collections of minerals and so on. Numerous requests from schools show that a demand exists and it is hoped that in this direction also labour and financial assistance will be forthcoming.

Work with school children is still carried on, but necessarily on a reduced scale. Two years ago the Director of Education expressed his appreciation of our efforts and regretted that the shortage of teachers remained a restricting factor.

Within the Museum there has been at least some extension of teaching facilities. Cotton has assisted the Visual Aids Section of the Education Department in preparation of strip films, and various exhibits in the Children's Museum have been used for the same purpose. Two

years ago arrangements were made for groups of hard-of-hearing children to visit the Museum with their teachers, to lip-read talks by members of the Museum staff and to handle relevant specimens. Students from the School of Arts continue to attend weekly classes in the Museum.

Following the war an important development was the formation of an Australian UNESCO Committee for Museums; a valuable result is that the Directors of the various Australian museums are given an opportunity of meeting together at least once annually. In addition to this the Commonwealth Government set up a Museums co-operating body, a welcome contribution to the co-ordination of the work of Australian museums.

During World War II large collections of natural history material in the Museum at Manila, in the Philippine Islands, were totally destroyed or looted by the Japanese. The Manila authorities appealed to UNESCO for assistance and at a meeting of the Australian UNESCO Co-operating Body for Museums it was agreed that collections should be sent from each State to the Philippine Islands through UNESCO. The South Australian Museum Board donated a considerable collection of Australian anthropological material, a series of reptiles and Amphibia, comprising a good cross section of the commoner species of snakes, lizards and frogs found in South Australia, as well as fishes, crabs and prawns and a hundred species of typical South Australian shells. Several store boxes filled with pinned insects and a collection of scorpions and spiders preserved in alcohol were also sent, while herbarium specimens were assembled to indicate the type of plants growing in South Australia.

At about the same time the Commonwealth Government agreed to finance the preparation of a travelling exhibition to illustrate the life of the Australian aboriginal. A working party was set up and during the initial stages of preparation Tindale travelled to Sydney and a lay-out following the general plan which had evolved during the formation of the Indonesian Hall was put forward and adopted. Subsequently the South Australian Museum supplied a considerable amount of material, including bust and face casts, weapons and implements. The photographs supplied included a dozen 10 inch by 12 inch enlargements of photographs selected from the magnificent series of F. J. Gillen negatives.

Other Australian museums contributed and finally 24 panels were prepared, which were sent abroad on tour under the direction of UNESCO.

The writer was appointed a corresponding member of the International Committee on Monuments under UNESCO in 1951, on the proposal of the Government and with agreement of the aforementioned Committee.

In 1953 UNESCO sponsored a seminar for discussion of "The Role of Museums in Education"; this was held in the National Museum in

Melbourne. Delegates from all States attended and amongst papers read were four prepared by members of the South Australian Museum staff.

Field and Research Work

After necessary readjustments had been made and arrears of work with the collections overtaken, field work was resumed in 1948. In the course of the last nine years members of the staff carried out trips, mostly of a few weeks duration, to various parts of South Australia—Greenly Island, the Lake Torrens area, the Lake Eyre Basin, Gawler and Flinders Ranges, Central Australia, the South-east of the State, Kangaroo Island and other South Australian localities—as well as to Victoria, Queensland, Tasmania and Western Australia.

Gross and Mitchell have made ecological studies in their respective fields, paying some attention to the higher altitudes in arid areas, particularly the more inaccessible parts of the steep Elder Range, 25 miles north of Hawker. For this last the two investigators travelled with light hiking gear and proved that so equipped it is practicable to make good collections, not only of reptiles and insects but also of plants.

T. D. Scott visited many parts of the southern coast, his studies being confined in the main to fishes; he successfully completed a useful study of the life-history of the commercial whiting *(Sillaginodes punctatus)* in South Australia, showing that the female of the species spawns for the first time when 5-6 years of age. This research must prove valuable; the whiting referred to is highly prized as a table delicacy and Scott's results demonstrate that further protective measures are desirable.

In June, 1955, Scott and P. F. Lawson left Adelaide to study at the University of California, having been granted leave of absence for twelve months.

As Honorary Botanist, J. B. Cleland suggested that watercolour sketches of South Australian fungi should be made for permanent record whenever specimens became available in the vicinity of Adelaide. By mid-1948 Gwen D. Walsh had prepared 120 accurate drawings and these are added to from time to time. Some were reproduced in colour to illustrate a paper in the *Records* (1947) prepared by Cleland and J. R. Harris and dealing with some species of Australian fungi possessing antibiotic properties. Work on this subject in the Institute of Medical and Veterinary Science in South Australia has attracted considerable attention abroad and a request was received from the Botanic Gardens in New York for spores of a "mushroom" illustrated in the abovementioned paper.

During 1947-1949 the Conchologist (B. C. Cotton) was seconded to the South Australian Department of Mines to undertake identification of Tertiary Mollusca resulting from stratigraphic work carried on by the Department.

Following requests from C.S.I.R.O. and Agricultural Departments for identifications of introduced snails and slugs in Australia, work on collection and identification of specimens had been commenced in 1937 by Cotton and a paper was published in the *South Australian Naturalist* with a view to encouraging observation of these pests. Travelling and other difficulties handicapped this work during the war, but since extensive searches were made by Cotton in Western and South Australia, Victoria and New South Wales. As a result a large collection was accumulated, with a view to identifying and assessing variation from types of the many species now distributed in all States. In later years this was continued in collaboration with Dr. H. E. Quick of London, President of the Malacological Society, who has made a special study of the problem and has greatly assisted by comparing original European types and exchanging comparative material. A complete catalogue of snails and slugs introduced into Australia was published in the Museum *Records* in 1954 showing the origin and distribution of 35 species.

N. B. Tindale in 1947 published an account of long continued researches in the subdivision of Pleistocene time which he had undertaken in a search for reliable data on the antiquity of Man in Australia. His earlier work (1933) on marine interglacial terraces of the Pleistocene in South Australia had proved useful to F. E. Zeuner, the authority on Pleistocene climates. His data and conclusions have helped to stimulate Australian interest in the subject and have received support from later work. He has in still later papers challenged the conclusions of those who would read into Australian recent history a "Great Arid" period, whose supposed effects have been so vast as to directly affect the present day fauna and flora.

In January and February 1949 Tindale visited Tasmania in order to complete work on a study of the half-caste aboriginals on Cape Barren Island. This was in furtherance of some of the investigations begun by the Harvard-Adelaide Expedition immediately before the war. Subsequently the Queen Victoria Museum at Launceston published a lengthy paper by Tindale entitled "Growth of a People", an important contribution giving an account of the formation and development of a hybrid aboriginal and white stock on the islands of Bass Strait, Tasmania, 1815-1949.

A combined effort of the Melbourne and Adelaide natural history museums resulted in the recovery in October 1949 of the long-dead trunks of 52 Coolibah trees, valued because of their aboriginal carvings. The existence of such trees has been known for years; the carvings are wavy

and snake-like and their meaning is not entirely clear. Those collected were situated on a station property at Collymongle, near Collarenebri on the Barwon River, in New South Wales, and for a long time had been part of one of the surviving Bora grounds, or native initiation sites, in Australia. Mr. Lindsay Black, of Leeton, New South Wales, had for long been actively interested in adding to our knowledge of aboriginal stone-age culture, and wrote several papers on various aspects of tribal lore. It was through him that Tindale and Donald Tugby, Ethnologist at the National Museum in Melbourne, were able to arrange the two-week tree-felling expedition to this site. Of the trunks collected, 25 went to Melbourne, 25 to Adelaide and two to the University of Queensland. In all probability these trees were carved about the year 1863 and were touched up in 1885; they were originally painted with red ochre and pipe clay by the aboriginals but old natives in the district have now no satisfactory explanation of their significance. It was as tangible relics of a culture that is fast dying that these fragile hollow trunks were cut down to preserve them from possible destruction by bushfires and certain deterioration by weather.

In many parts of South Australia there occur aboriginal rock-carvings (or petroglyphs) of which the living natives appear to know very little. The first of such carvings to be noticed in the State were reported by a police officer, E. G. Waterhouse, in 1902; since then a great many more have been discovered. Some consist merely of circles or barred circles, but in others silhouettes or outlines of animals have been pecked out on the rocks, while tracks of various creatures are delineated.

It has been suggested that certain of these tracks imitate the foot-prints of the extinct marsupial *Diprotodon* and the fossil Ratite bird *Genyornis;* the bird carvings usually are not particularly well defined. In 1950, however, F. J. Hall (formerly an honorary ethnological assistant at the Museum) and two companions found a large number of native carvings near water holes in the bed of Eucolo Creek, in the vicinity of Pimba on the Adelaide-Perth Railway. These include series of giant bird tracks, each about 18 inches in greatest length; although old they are far more definite and clear cut than similar representations previously recorded. In 1865 or 1866 the Rev. J. E. Tenison Woods of Penola, noted for his keen interest in fossil remains, came into possession of leg-bones of a large extinct bird from the South-east of the State. Thirty years later Stirling and Zietz considered that these bones in all probability were referable to *Genyornis.* Tenison Woods, in describing his find, made the statement that the bird "appears to have been contemporaneous with the natives, for these bones are marked with old scars, one of which most certainly has been inflicted by a sharper instrument than any in possession of the natives at present; there were, however, fragments of flint buried with the bones, and a native well about 50 yards away".

Plaster casts were made for the Museum of a representative series of the Eucolo carvings, including these giant bird tracks. The detailed nature of the latter, showing the separate claw and pad impressions of the bird, suggested to Tindale that the native artists may have been familiar with fresh tracks. They may yet be regarded as corroborative evidence that *Genyornis* was still alive when the aboriginal came to Australia. Support for such a conclusion appeared in the studies at Lake Menindee, New South Wales, which were published in the 1955 volume of the Museum *Records*. The archaeological remains of aborigines of three cultures were found in beds which appeared to overlap the period, in the Early Recent, of the extinction of the great Pleistocene suite of mammals of which *Diprotodon, Procoptodon* and *Protemnodon* are representatives.

In August, 1951, a successful anthropological expedition was made to Yuendumu in Central Australia by the University and Museum. This was the sixteenth expedition to Central Australia organized by the Board for Anthropological Research. More than 100 natives were studied, while three cinema films and ethnological material were secured; the sacred cave at Ngama was examined during the course of this expedition. Dr. T. D. Campbell organized the venture and later he and others returned to the station on several occasions with smaller parties.

It was in 1950 that attention was drawn to Lake Eyre when, after it had been dry for 30 years or so, it was filled to its geographical boundaries. During the preceding year flood-waters from the north-east began to spread over its surface. Supplemented by further floods and unusually heavy rain over the centre of the Lake Basin, the highest water level was reached about October, 1950; in May and again in December of that year C. Warren Bonython made the earlier of a number of expeditions to determine the rate of natural evaporation of the waters and to carry out other investigations. As it was considered that the favourable season would provide unusual opportunities for collecting natural history material a Museum party left in November to work in the Flinders Ranges, and a week later, at the invitation of Bonython, met the last-named and his group of investigators at Leigh Creek, *en route* to the Lake. On this occasion the Museum party (Gross, Mitchell and Lawson) were accompanied during the first part of the trip by a visiting entomologist, Dr. W. L. Brown of the Museum of Comparative Zoology at Harvard, U.S.A.; the reptiles and insects secured from this inhospitable region are of unusual interest.

Influenced by his growing interest in the vast Lake Eyre Basin, Bonython suggested to the Board that the Museum should secure further *Diprotodon* material from Lake Callabonna, and that as a first step additional bones should be recovered for experimentation in order to discover more efficient methods of preservation. Half a century before, Stirling wrote:

The condition of the bones varied very much—some were so friable that they crumbled into powder and could not be removed; others, usually in moist places, were wet, soft and of the consistency of putty. Curiously enough, for reasons which are not clear, some bones from wet places were firm and hard, while others, from ground that was comparatively dry, were soft. As a rule those in best condition came from localities which, without being too wet, were moderately damp. The bones, thus varying in condition and consistency, required very different methods of preparation. The greatest difficulty was undoubtedly due to the circumstance that the bones were saturated with what was practically a concentrated saline solution. In fact, all their cavities were so filled with this fluid that it was necessary to allow a considerable time for it to drain away. In other cases the bones were encrusted and impregnated with gypsum crystals. From such causes the bones became in dry weather brittle and liable to break or crack, and in damp weather difficult to dry. Very careful and patient methods of treatment had consequently to be adopted and will still be necessary until the salt is removed.

The methods of preservation and restoration practised by Zietz had occupied a great deal of time and labour. It was decided that a Museum party should make a preliminary survey of the Lake during the autumn of 1953 with a view to investigating the whole problem.

It was now found that Professor R. A. Stirton of the University of California at Berkeley would be coming to Australia as a Fulbright Research Scholar at about this time, in order to search for Tertiary mammalian fossils. Stirton, a field worker of tremendous energy, has wide experience in collecting fragile fossil bones and was asked to lead the Museum party during the course of his own investigations in the Lake Eyre Basin, which he planned to visit on the advice of Sir Douglas Mawson, who was of opinion that the country east of Lake Eyre was a likely place for discovery of Tertiary mammalian remains.

Stirton, accompanied by a graduate student from his University (Richard H. Tedford), arrived early in 1953 and at once agreed to the proposal. The fossils found by Tindale and Birdsell at Lake Menindee in 1939 (see p. 154), although more recent than the Tertiary, attracted his interest, so much so, that, with Tindale and Tedford, he journeyed to the site, on the Darling River in western New South Wales.

A second and longer expedition, to include Lake Callabonna in its itinerary, left Adelaide in April, 1953, the party consisting of Stirton and Tedford, Lawson from the Museum, and Geoffrey D. Woodard, a graduate geology student at the University of Adelaide. A 3½ ton Canadian Ford truck was driven by Lawson, as it was decided that a heavy vehicle, with four wheel drive, would be desirable for transport of heavy fossils and equipment. Stirton had already purchased a Land Rover with a trailer and this vehicle proved more efficient for prospecting and generally more mobile than the larger truck. A reconnaissance trip was carried out in the difficult country west of Lake Eyre but none of the desired Tertiary

fossils was found. The party turned south and made their way to Lake Callabonna.

The final site on which Zietz had worked in 1893 was discovered with difficulty but eventually evidences of the 60 year old camp were found and nearby were skeletons of *Diprotodon*, easily located, when not exposed, by probing the mud with steel rods, a method which had been practised by Zietz. In 20 days the party collected the complete skeleton of an adult, part skeletons of two juveniles and the skull and jaws of another. All, carefully encased in plaster, were brought to Adelaide.

His mission still not accomplished, Stirton, with Tedford and Woodard, next investigated the country east of Lake Eyre and there found at Lake Palankarinna a Tertiary marsupial fauna which included remains of a new genus of kangaroo, and bones of two undescribed genera of diprotodons. Dr. Harold C. Reynolds, Research Fellow at the University of California, arrived in Adelaide at this time in order to conduct field research on some of our marsupials, using the Museum as a base during his operations in South Australia. As a preliminary he immediately left in his own station-waggon, to join the party at Lake Palankarinna.

At the close of this expedition Stirton decided to return to South Australia a year later to explore further this deposit, leaving arrangements in the hands of the South Australian Museum.

In view of the proved advantages of the Land Rover in the rough interior one of these vehicles with steel trailer was purchased by the Museum. Stirton duly came to Adelaide in July, 1954, and with a cinematographer flew north to join a party working at Lake Palankarinna, which had been gazetted a fossil reserve. The advance party consisted of L. F. Marcus and Woodard from the University of California, and William Cassidy, Riedel and Lawson of the South Australian Museum staff. The Lake deposits worked out, Stirton and his associates continued to Queensland and New South Wales.

Although Riedel, as Museum Palaeontologist, accompanied this expedition to search for mammalian remains in the Lake Eyre Basin, invertebrate fossils claimed his closest attention in the laboratory. His most important research project was the segregation and critical identification of Radiolaria from cores; the remains of these minute creatures are proving a valuable factor in determining the age of rock formations.

In April, 1955, H. Bowshall, P. Lawson and W. Riedel went to Yalpara Station, near Orroroo, to collect a *Diprotodon* which had been reported there. The skeleton was found to be practically complete, but in a poor state of preservation. As much of it as possible was prepared and brought back to the Museum.

Immediately following the last-mentioned trip, G. F. Gross together with T. D. Scott and artist H. Bowshall, left for the Lake Eyre Basin.

More than eight inches of rain had fallen in the Oodnadatta district and, for the second time in five years, there was considerable water in Lake Eyre North and South. Under these circumstances the Board decided that the Museum party should visit the area at intervals of three months in order to record the conditions obtaining at successive periods, to secure collections of the animals and plants then occurring, and to secure all possible ecological data. Dr. Giles, as Entomologist, N. B. Tindale, G. F. Gross, F. J. Mitchell and R. Hill (an officer from the Botanic Gardens Herbarium) also took part in subsequent expeditions.

During the past ten years a considerable number of overseas anthropologists came to South Australia to study various facies of the large ethnological collections. In 1953, for example, Dr. Ruth Underhill, formerly Professor of Anthropology at Denver University, U.S.A., spent two periods examining our Australian collections. Dr. and Mrs. Richard Waterman, of the North-Western University of Illinois, were given research facilities and studied the sound records of aboriginal songs and speech; subsequently they spent a year or so in the Northern Territory before returning to the Museum to assemble their data. Professor and Mrs. Hartshorn, of the University of Chicago, paid several visits and made copies of drawings and *tjurunga* designs. Dr. Joseph Birdsell, with Mrs. Birdsell and an assistant, again made his headquarters at the Museum from whence he organized an expedition of two years duration to the northern parts of the Continent in order to continue work on the genetics of our aboriginals inaugurated by the pre-war expedition. Tindale, from April to November, 1953, spent six months with the Birdsells in North-western Australia and secured much data on his subject, including the tribal distribution of the aborigines; he collected large quantities of zoological and other material, and purchased ethnological specimens in the field with money granted from bequest funds. Notably, he contacted two old aboriginal men in this area who proved to be the last surviving natives with knowledge of the pressure-flake technique used in the making of the beautiful crenulated spear-heads peculiar to this part of the Continent. Willing to demonstrate their skill, these grand old men continued to supply for months afterwards choice examples of the almost lost craft of the pressure-flaked stone worker.

For a good while contacts had been maintained with the few remaining aboriginals of Yorke Peninsula; in 1953 the death of the last man who possessed data of their culture severed one of the few remaining links with the original native inhabitants of that area.

Several American researchers, under the auspices of the Fulbright Plan and other bodies, spent considerable periods at the Museum. William Cassidy has already been mentioned; a meteoritics expert and graduate from the University of New Mexico, he came to South Australia in 1953,

studying for a year in the institution and in the Geology Department at the University. He was attracted to the Museum, naturally, by the unusually large collection of about 18,000 Australian tektites, as well as other meteorites available in Adelaide. Cassidy became a full-time member of the Museum staff for the latter half of 1954 and supervised the making of a meteorite cutting machine, a long-felt want. The machine was constructed by A. Rau and his assistant; Rau being a skilled technician, the apparatus was quickly assembled and meteorites successfully sliced, including the difficult Huckitta pallasite.

In the latter half of 1953 Cassidy, with Land Rover and trailer and with Gross as companion, travelled to North-western Australia, Darwin and Central Australia, ten weeks being spent in the field. Tindale joined them at Hall Creek for a visit to Wolf Creek crater. A meteorite crater was known to exist at this place, south of East Kimberley Range—in fact it had been photographed from the air. Large and small fragments of highly weathered meteoritic material were recovered from this crater and sent to Adelaide, where about one-third of the 1,000 pounds or so remain; Cassidy distributed the remainder to other museums and universities. At the Henbury craters, near Alice Springs, Cassidy and Gross found many impactites—small droplets of melted rock formed when this great meteorite fall occurred.

The Collections

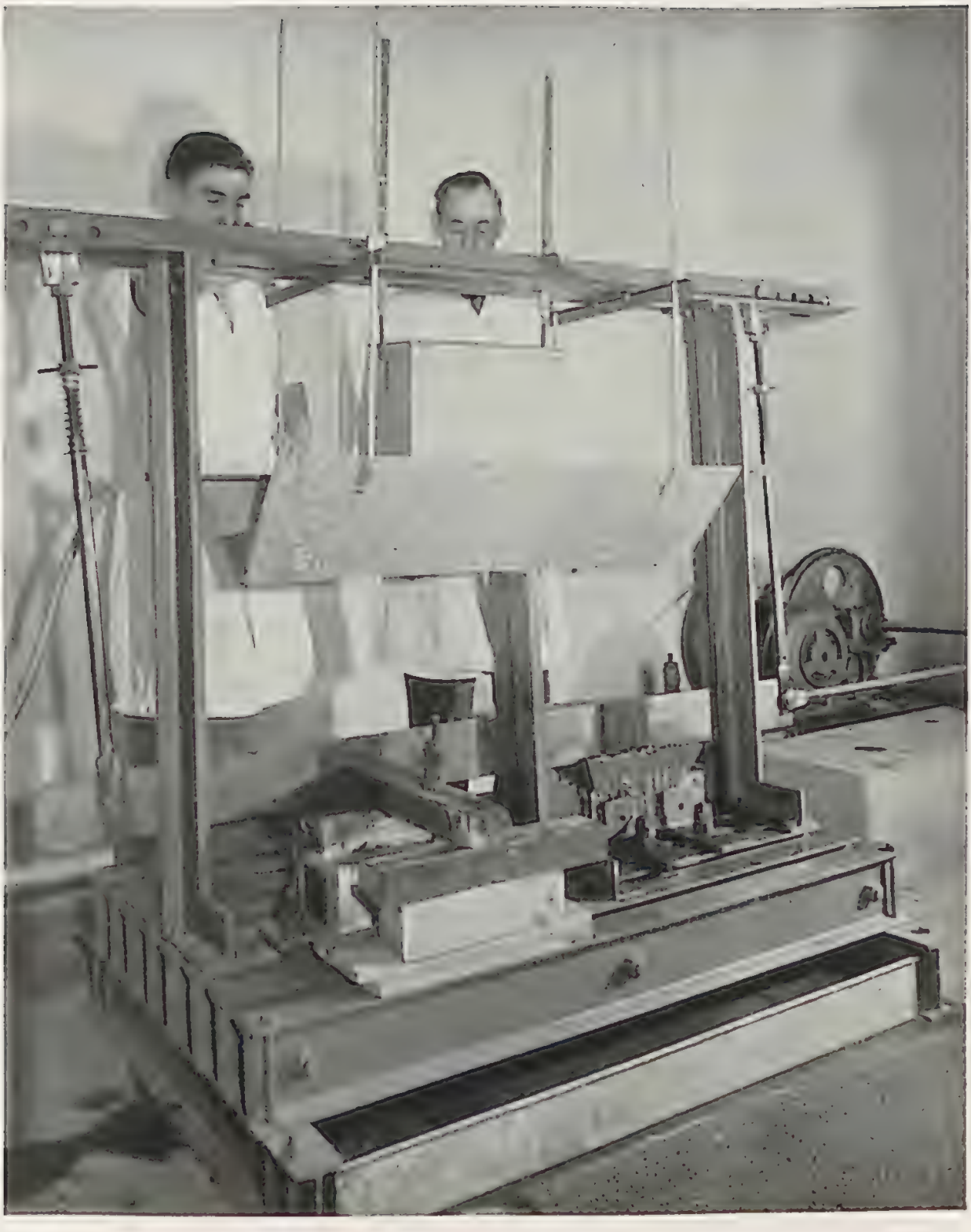
Most additions to all sections during the past decade were either donated by interested persons or were secured in the field by members of the honorary and permanent staffs; only a few relatively large collections were purchased.

In 1950, John T. Mortlock, pastoralist, of Mintaro, South Australia, bequeathed to the Museum Board a sum for purchase of specimens for exhibition.

Ethnologia, important because of their increasing rarity, came in small collections from all parts of Australia, various districts in Papua and New Guinea, Rossel Islands and the vicinity, the Solomon Islands and the Bismarck Archipelago. By exchange and presentation specimens were acquired from England and Europe, Japan (Ainu) and India, Mexico, Egypt and North Africa.

Soon after the war, Mrs. P. P. King generously donated a series of New Zealand clubs and we were delighted to find that these included a valuable greenstone *Mere*, the finest received since the superlative example presented by Sir George Grey in the 19th century.

Amongst the larger donations were fine series of aboriginal stone implements and cylindo-conical stones gathered by the late Dr. W. D. K. McGillivray in the Broken Hill area; these were presented in 1950 by H. L. C. Cotton of Broken Hill. A year later Dr. D. Parkhouse and Miss



Apparatus for cutting meteorites in South Australian Museum, 1954

M. A. Parkhouse donated a notable Australian collection, that made by the late T. A. Parkhouse, who worked amongst the people of the *Larakia* tribe in the Northern Territory in the 1890's, and who in 1895 published two anthropological papers recording his observations.

Following the death of Dr. C. E. C. Wilson of Adelaide, well known as a private collector, his family sent to the Museum ethnological objects from New Guinea, New Caledonia, the Solomon Islands, and Oodnadatta in South Australia; included is a small group of most interesting specimens from southern South Australia, representing types of implements once used in the vicinity of Adelaide and exceedingly rare in Australian museums.

Two outstanding contributors to the New Guinea and Papuan ethnologia during the last five years or so must be mentioned. The Rev. A. P. H. Freund, operating in the Central Highlands of New Guinea, supplies specimens of unusual value, in that not only do many of them represent types new to the Museum, but they are accompanied with photographs and are most carefully documented. In 1952 the Lae Valley, also in the Central Highlands, was occupied by a Catholic Mission and there Mr. L. Howie procured a fine and welcome collection for the institution.

Considerable additions to our North Queensland material came to hand in 1953. During 1927-28, and again in 1934, Miss Ursula H. McConnel, a Queensland anthropologist, conducted field research in the Gulf of Carpentaria region of Cape York Peninsula and especially on the Kendall, Holroyd and Archer Rivers, working with the aid of grants from the Australian National Research Council. Her collections were deposited through courtesy of the last-named body and technical data were published in the *Records of the South Australian Museum.* The key specimens, 160 in number, were particularly welcome, being complementary to those obtained in 1926 by Tindale and the writer on the east coast of Cape York Peninsula and likewise demonstrating Papuan and Torres Straits Island influences upon mainland cultures. Comparable series were distributed by Miss McConnel to collections in Sydney and Canberra.

Our Malayan aboriginal collections were being built up in 1951-1953 with meticulously documented specimens through the activities of Peter D. Rider Williams-Hunt. His sudden tragic death in June 1953, through falling into a trap defending a native village near Tapah, cut off our link with Malayan ethnographic research. Through him we had received useful archaeological material from the Gua Kerbau Cave in Perak, as well as specimens illustrative of the negritos, with whom he had identified himself.

Some important material has been acquired during the last three years.

An outstanding purchase in 1954 was the Savage collection from Naracoorte, comprising 943 registered ethnological items as well as numerous minerals and zoological specimens. There were priceless old carved wooden figures from the Papuan Gulf, as well as an amazing variety of specimens covering all phases of human activity from the old Stone Age to the mechanical gadgets of the 19th century, even including a fine model of a sailing ship in a glass bottle.

In the latter half of 1954 the Honorary Associate in Ethnology (C. P. Mountford) was in charge of a National Geographic Society's Melville Island expedition, the personnel of which comprised American and Australian ethnologists, an anthropologist, a geologist and an ornithologist. Mountford's research was centred on the art, myth and ceremony of Melville Island.

The collection of bark paintings and ethnological objects collected during this expedition to Melville Island was received in exchange for assistance made available in elaboration of field reports for publication. It comprises 359 specimens and includes striking series of carved wooden grave post figures *(pukamuni)* and associated ceremonial objects, paintings on bark made for him, and a series of demonstration-hafted chipped stone axes.

With some further contributions by Mountford to the collections of bark paintings the South Australian Museum now possesses approximately 300 of these examples of native art—probably the greatest number in any museum at present.

A collection of approximately 2,700 Pacific Island and Australian specimens was purchased in 1955 from C. S. Ashley of New South Wales and also a large selection from the collection of the Rev. F. W. Brasher, these being principally from the Solomon Islands. The Ashley collection is notable for series of archaeological stone implements from coastal New South Wales and contains much ethnographic material from various Pacific Islands. Notable in the Brasher collection is a series of three hafted stone hammers, and two trinkets worn by chiefs and of types rarely seen. Much of the material in this collection originally came from the Rev. A. H. Voyce, whose own collection in the Solomons was destroyed during the war with Japan.

Sir Douglas Mawson at this time presented a series of arrows and other welcome ethnological specimens, some from the New Hebrides, and others from collections made by his father, R. E. Mawson, who was in the Vailala River area many years ago.

A donation also of unusual interest was made by R. B. Morrow. This comprised a series of objects used by a native magician at Sturt Creek, North Western Australia, including human arm bones and emu feather plumes; the aboriginal concerned had taken part in the killing of a native woman.

Our Australian ethological collections, like those of other museums in Australia, are not entirely comprehensive. It is a matter for regret that by 1890 it was almost too late for adequate gathering of data and materials of aboriginals of parts of the southern and south-eastern fringes of the Continent, where the earliest European settlements had been established. Since then more than half a century of accumulation of data in Australia has not remedied this deficiency completely; anthropologists for all time may be under necessity of studying key south-eastern Australian ethnographic material in European collections. One of the tragedies of the mid-century is that not all of these collections are available now; during World War II several of them were destroyed, including the Ethnographic Museums at Hamburg and at Frankfurt-am-Main; formerly these last two were the largest collections of Australian ethnographic material outside of Australia. During his visit to Europe in 1936-7 Tindale photographed many key items, some of which are no longer in existence.

In the South Australian Museum the ethnological material registered and catalogued to date comprises 48,000 entries, some of which, particularly in the case of smaller aboriginal stone implements, cover very many individual specimens. The collections occupy four large store rooms and are housed in standard containers or on racks; 1,250 cabinet drawers are filled with the smaller perishable and delicate specimens, while glass cases are utilized for larger material in the same category. Two of the storerooms, containing 30,000 specimens, are sealed and protected with napthalene vapour.

All museums of natural history are fully aware that the use of fumigants and insect deterrents is an essential feature of curatorial work. It may be well to mention here that our experience with para-dichlorbenzene, sometimes recommended as a safeguard to insect infestation, has not been happy. In the first place it is said to be effective for its purpose only at relatively high temperatures and is therefore of uncertain value. Secondly, with ethnological material it can cause considerable destruction, for, in the presence of para-di-chlorbenzene fumes over a long period, resins used in the hafting of aboriginal axes, the attachment of spear-heads and so on, partially liquify and cease to hold in place the stone implements. At least one other Australian museum has suffered similar damage.

There are approximately 9,800 ethnological specimens on exhibition at the present time, in cases occupying two-fifths of a mile in running feet.

Although the Commissioner of Police and his staff continue to send to the Museum aboriginal skeletal material which comes to their notice, a steady falling off has been noted during the last ten years. It is considered that this decline reflects a progressive exhaustion of local deposits but at the same time may be accentuated by better farming methods

and the reduction of soil erosion, which so frequently exposed native burials.

The mammal collection, while fairly representative, is not very large, little more than 6,000 specimens (skins, skeletons, skulls, etc,), having been registered. Much of the material has been collected by the staff, honorary or otherwise, during expeditions and field work, and the rest has been acquired mainly by donation. Never in the history of the Museum has a full-time salaried mammalogist been appointed and while this position obtains no consistent building up of the collection necessarily can be anticipated. The Australian and extra-Australian mammals occupy a considerable part of the exhibition space available; they are for the greater part much overcrowded and until such time as floor areas for displays are vastly increased dioramas for effective presentation are impracticable.

It is worthy of note that a young Pigmy Right Whale *(Caperea marginata)* came ashore near Port Lincoln in Spencer Gulf during December, 1955. The skeleton of this example was recovered by A. Rau, with the assistance of G. F. Gross. At the same time the skull and part of the skeleton of a large adult were obtained. The specimen concerned had been found about five years before on the beach at Coffin Bay (also near Port Lincoln) by J. G. Haggarty, who donated the bones, together with photographs of the whale, secured when it was stranded. These comprise the fourth and fifth examples of this rare species to be recorded from South Australian coasts (see also p. 51).

In February, 1956, a young male example of the Strap-toothed Whale *(Mesoplodon layardii)*, almost 15 feet in length, was seen swimming in the American River Estuary on Kangaroo Island for about a week, after which it became stranded in shallow water in an obviously injured condition. The skeleton was recovered by F. J. Mitchell and assistant preparator T. H. J. Chesterfield. This is the twelfth specimen to be recorded, on definite evidence, in South Australian waters.

Fortunately, Professor R. A. Blackburn, of the University of Adelaide, and some friends were on vacation at the locality when the whale was noticed alive in shallow water and made some interesting observations concerning the life colouration of the specimen. Dorsally this was brown, with a noticeably bronzy sheen when viewed obliquely; the ventral surfaces were described as off white tending to grey. Very soon after the animal died, however, a rapid change in colouring ensued and a few days later the upper surfaces were ebony black. It seems obvious, therefore, that in previous descriptions of South Australian specimens the skin colours given were due to post-mortem changes. It may be mentioned that a Beaked Whale about 14 feet in length, and possibly referable to *Mesoplodon layardii,* was observed by the writer swimming in Vivonne

Bay on the south coast of Kangaroo Island in January, 1926. The dorsal colouration of this example was chocolate brown.

The last important addition to the ornithological section was made early in 1956 when Professor Emeritus J. B. Cleland presented his large collection of several hundreds of skins of Australian birds together with a few of foreign birds. This and a collection of Australian plants presented at the same time to the State Herbarium are the result of Professor Cleland's lifelong interest in birds and in the botany of Australia. Professor Cleland, now in his 78th. year, is following actively all his interests and is still continuing strenuous field work with undiminished vigour.

The present ornithological collection has been built up by the efforts of the staff and through gifts, exchanges and purchases. Over 10,000 cabinet specimens from all Australian States are referable to 659 species out of a possible total of 707, and there are more than 6,000 clutches of Australian eggs and about 2,000 items in the osteological collection.

None of the bird specimens taken by Gould, Sturt and other early explorers is included. Indeed, as already mentioned, it will always be a matter for regret that very few of the numerous specimens gathered with such enthusiasm by the intrepid collectors during the beginning of the second half of the last century were retained. The oldest study skin is believed to be that of a Night Parrot *(Geopsittacus occidentalis)* which dates from about the year 1880, and there are many others which are known to be more than 60 years old.

Most of the birds on exhibition are in excellent condition and the collection has grown steadily during the last 40 years. In the research collection the foreign birds are poorly represented, but there are about 3,500 skins and 500 clutches of eggs. In recent years foreign birds have been obtained mainly from the Adelaide Zoological Gardens.

Generally speaking, facilities for ideal housing of the study collections of birds have not been made available and wooden cabinets of all shapes and sizes, and derived from many sources, are employed. Also, until recently, the drawers were crammed to overflowing and to overcome the difficulty of finding specimens readily a card-indexing system was inaugurated by the former honorary curators Morgan and Sutton. The system works well and is believed to be superior to that employed in any other Australian museum. Thus, although the ornithological collection might be regarded as small and badly housed by world standards, the material is readily available for taxonomic analysis and fills many of the gaps in the better-publicised collections in Melbourne and Sydney.

Recently, some new wooden cabinets with interchangeable drawers have been provided for storage of Australian material and these have

enabled part of the collection to be arranged in a manner comparable to that adopted overseas.

The reptile and amphibian collection contains a good cross-section of the Australian herpetofauna, but is deficient in specimens from coastal and highland districts in New South Wales, Victoria and Tasmania. The foreign collection is small and for the most part restricted to material obtained in the Indo-Australian Archipelago and South-east Asia.

A register commenced in 1911 contains 3,700 data entries estimated to cover 14,000 specimens. Large series of specimens obtained on expeditions into Central Australia and the Northern Territory, as well as casual donations to the Museum prior to 1911, were not registered. Although the appointment of a permanent officer in charge of this section has resulted in identification and registration of about 1,000 of these "old collection" specimens, it is estimated that several thousand unregistered specimens, including some Stirling and Zietz types, still remain scattered through the collection.

A useful contact with the Underwater Spear-fishermen's Association of Western Australia was made when F. J. Mitchell visited that State early in 1954; as a result an excellent collection of Western Australian fishes has accumulated in Adelaide, sent for identification by spear-fishermen, in many separate batches and from many different localities.

Ray B. Hambly Clark, a big-game fisherman in South Australia, had promised to catch and deliver to the Museum a White Pointer Shark *(Carcharodon carcharias)*. In 1954, fishing from a yacht near Kangaroo Island, he caught a specimen 1,424 pounds in weight and more than 12 feet in length; this duly came to the Museum and from it a papier-mache cast was made. The stomach of this example contained several full-grown Kangaroo Island wallabies which had been used as decoys, a large Skate and various marine odds and ends. A more intriguing find was that of a lady's ear-ring in the stomach of another shark caught during the same year. A large White Pointer, over 15 feet in length and weighing 1,919 pounds had been captured, also off Kangaroo Island, in 1941 by another well-known expert, G. R. Cowell, using 54-thread line; a cast was made of the head, and this with the original teeth installed is mounted on a wall of an exhibition hall with a painted representation of the rest of the fish running back from the head. These are by no means the largest White Pointers from Australian waters; one from Port Fairy in Victoria, and recorded many years ago, was 36½ feet in length.

The fish collection preserved in spirit comprises some 10,000 specimens of Australian and exotic species. The major portion of the collection consists of the fishes of South Australia together with the abovementioned series from Western Australia. Almost every species of fish known to occur in South Australia is represented, but the collection is deficient in

specimens from the eastern and northern coasts of Australia. On display the casts of Australian fishes include comprehensive series of the common food and big-game fishes of South Australia, together with replicas of fishes from other parts of Australia having a particular interest, such as the Australian Lung-fish *(Neoceratodus forsteri)* from the Burnett River of Queensland.

Recent expeditions, particularly those to Lake Eyre, have resulted in large additions to the insect collections, and specimens are more meticulously documented than previously; Tindale, who retains an interest in Lepidoptera, collects these insects whenever opportunity offers and added by personal effort thousands of butterflies and moths to the cabinets. Small collections combined to furnish many thousands of insects in all groups from localities in each State; from the islands of north-eastern Pacific and from Malaya and North America. Acaridae from Asia, the Pacific Islands and Australia were sent in great numbers for examination by Womersley.

It was during the year 1947 that the collections of Lepidoptera in Australia were to attract more wide-spread attention of the press than ever before. One morning in 1946 the caretaker reported that during the previous night the lock on the front doors of the eastern wing of the Museum had been forced. Later it became apparent that this was no casual effort but evidence of one of the most unusual and well planned thefts from three Australian museums, although in Adelaide the thief was fortunate in that the burglar alarm normally operating was temporarily out of order. It was discovered that almost 3,000 butterflies were missing from the entomological cabinets of the Australian Museum in Sydney, the National Museum in Melbourne, and the South Australian Museum. The Lepidoptera missing from Adelaide numbered over 600, and were valued at £3,000; like those from the other museums concerned they were specially selected rare or unique specimens and obviously had been purloined by a skilled if unscrupulous entomologist. Early in 1947 the matter was put in the hands of the police and it was not long before Scotland Yard located the missing butterflies in Surrey, at the home of a private collector who, shortly before his depredations were discovered, had left Australia by plane for England. Scotland Yard seized the specimens and prepared a report for the Director of Public Prosecutions; the thief, admitting unlawful possession was fined £100.

The butterflies were sent to the British Museum, where Dr. John W. Evans (now Director of the Australian Museum) rendered valuable assistance in preparing them for safe transport back to Australia. In July 1947 they were landed in Adelaide, where the entomologists from the three museums which had suffered spent more than a week sorting the respective collections.

Credit for the size of the insect collection in the South Australian Museum must go to A. M. Lea, Entomologist from 1911 to 1932. During his term more insects were added to the collection than either before or since (see pp. 92.94). If the present rate of acquisition is not accelerated, the pre-eminence of the South Australian entomological collections as the largest in the Commonwealth, if not in the Southern Hemisphere, will soon be challenged by the fast-growing collections of the Division of Entomology of the C.S.I.R.O. in Canberra. In a review "Entomological Research in Australia—1948-1954," issued by the last-named body, it is stated that: "As a corollary mainly to the ecological work and biological control, there has been a marked increase, more by necessity than design, in the amount of taxonomic work carried out by officers of the Division of Entomology. The volume of such work which needs to be done is so great that the museums and universities, whose responsibility it has previously been considered, have been unable to cope with it".

Lea's curatorial methods were in advance of most of his contemporaries but now, a quarter of a century later, several deficiencies are apparent in the technique of curation previously practised. In the light of modern taxonomic and faunal survey techniques, unthought of in Lea's day, and in anticipation of the time when insect classification will reach the advanced stage of that of birds and butterflies, we have departed from his practice of keeping only two specimens of a species from each State. Large entries are a *sine qua non* and considerable effort will be necessary to expand our series of each species, wherever this is possible. It is also becoming more usual to attach considerably more environmental detail on the specimen labels, towards the day when museums will be in a position to enter more fully into the faunal survey field.

Because of the very large volume of material, and the method of storage, which in itself provides a visible catalogue and register, only significant specimens are formally registered or catalogued. Types and certain material of lesser value, which has been the subject of systematic investigation, have been registered, and entries under this heading now comprise over 20,000. Collections on which considerable environmental data are available have been catalogued; as this is a recent innovation only 1,700 references have accumulated but both register and catalogue entries often apply to many specimens.

The insect collection is housed in 49 cabinets (of which 27 have interchangeable drawers) and 200 store-boxes; small forms are contained in 670 boxes of microscope slides and a few shelves in the spirit room are occupied by specimens preserved in fluid. Because of lack of space the entomological exhibit is small; it is located in only 10 display cases, and comprises about 600 specimens.

The reference collection of Mollusca is now one of the largest in Australia, the principal part occupying 800 steel cabinet trays

and 12 wooden cabinets of about 400 trays. The original Museum collection grew under W. T. Bednall's care to one of considerable size, while valuable additions were made by Professor Ralph Tate. A big step forward was made when the extensive Verco collection was presented to the Museum in 1926. This contained much of the rare dredged material obtained by Joseph Verco in South and Western Australia to a depth of 300 fathoms.

Selected specimens from collections of chitons accumulated by a number of specialists, W. T. Bednall, F. L. Saunders, Dr. W. G. Torr, E. Ashby, and the Rev. B. J. Weeding, form the Museum collection of this group, one of the most comprehensive in the world.

Our micro-slide collection of molluscan radulae numbers about 700 and may be one of the largest extant, many of the slides being prepared by the expert in this field, Professor Gwatkin.

The great number of specimens handled has rendered registration of all material impossible with available staff, but rare, or important, and holotype specimens, are registered and indexed. These alone are referred to in 14,500 entries in the molluscan register.

Continuous work on previously undescribed species in the collection has built up our holotype specimens to about 1,000, these being in steel cabinets in a separate strongroom.

We are fortunate in possessing a valuable library of the rare early works on Mollusca, purchased from all parts of the world and mostly donated by Sir Joseph Verco.

The extensive conchological collections have proved of great value in economic investigations in connection with water bores, minerals, harbours, shore lines, parasites and pests and have been extensively studied by visiting scientists.

Collections of Crustacea, Echinodermata, Bryozoa, Brachiopoda, Corals and Sponges are also of considerable size and contain many holotypes. Holotypes of the late Professor T. H. Johnston's Helminths are also preserved in our collection.

Government bores, sunk in the vicinity of Adelaide to augment the water supply of a growing population, during this period resulted in a recovery of large quantities of Pliocene fossiliferous material, including many Mollusca. The Burdett trust fund, founded to furnish awards for finding of certain vertebrate fossils, was first drawn upon in 1954 when Dr. F. M. Glaessner was rewarded for recovery of a Tertiary penguin bone from Port Noarlunga in South Australia. He accepted the small grant with some diffidence and immediately bent his efforts towards securing further fossil penguin material and as a result two additional bones were donated, these having been discovered by research students at Mount Gambier in the South-east of the State.

The fossil collections now include many thousands of specimens, most of which are stored in standard steel cabinets in the palaeontology section; to date more than 10,000 have been registered and catalogued. During the early years of the building up of these collections, many specimens which the South Australian School of Mines had purchased from European dealers were donated to the Museum, with the result that we now have series of representatives of many groups from classical European localities. Important local fossils which entered the collections during those early years include much of the then newly-discovered Pleistocene vertebrate material from the northern and south-eastern parts of the State, and from Kangaroo Island. Many fossils from the South Australian Tertiary were also obtained during that period.

Apart from additions made by the Museum staff, the Australian fossil collections were augmented by the acquisition of parts of private collections (those of W. J. Kimber, E. Ashby, and C. J. May). A series of type specimens of Archaeocyathinae was acquired from Robert Bedford of the Kyancutta Museum in 1937. The largest and most significant private collection of fossils is that bequeathed by Professor Walter Howchin—it comprises a very large number of specimens belonging to many different groups, and has filled many of the gaps which previously existed.

The Cocunda meteorite was acquired in 1946. A small siderolite, this was found by Byron Polamka near Cocunda Rocks in the Hundred of Inkster, Eyre Peninsula. The large iron from the Box Hole crater was received in 1949 (p. 163) and three years later a small fragment of the Rawlinna meteorite (Western Australia); the main body of this meteorite, weighing approximately half a ton, was sent by the finder, A. J. Carlisle, to the Perth Museum. The Wolf Creek meteorite from North-western Australia has been referred to already.

It was in 1949 that two diamonds from Echunga in the Mount Lofty Ranges were purchased (see p. 22) after examination and report by an expert.

At the present time the most important part of the mineralological collections comprises the specimens from the upper (oxidized) levels of the metalliferous lodes at Wallaroo, Moonta, Mount Painter, Broken Hill, etc. Collecting by the Museum staff, and acquisition of material from private collectors, has ensured that this Museum possesses adequate collections of these relatively rare oxidized minerals which have since been removed by mining operations. The interest and foresight of Sir Douglas Mawson, Honorary Mineralogist for so many years, has been largely responsible for the high quality of these collections. By the effective use of a small proportion of these specimens as exchange material, good specimens of minerals from overseas have been obtained,

and most of these have been used, together with Australian material, as exhibits. It is unfortunate that the Museum has never had a permanent mineralogist, for this has resulted in disorganized storage of the reference collections. However, the large number of mineral specimens in the collections, built up steadily over a long period, form the basis of good reference and research collections on which a useful active mineralogical section can be founded.

Recently, almost at the close of the first century of activities of the South Australian Museum, the titles of members of the staff in charge of the respective collections were changed to conform to those used in the larger museums in Australia and elsewhere.

South Australian Museum Board, 1955-56

Professor Sir Douglas Mawson, O.B.E., F.R.S., D.Sc., B.E. (Chairman).
Professor Thomas Draper Campbell, D.Sc., D.D.Sc., F.D.S.R.C.S. Lond., F.D.S.R.C.S. Edin.
Vincent Debonaire Haggard.
Charles Warren Bonython, B.Sc.
Mrs. Elizabeth Robson Simpson, M.Sc.

Past Members, 1940-1952

Professor Thomas Harvey Johnston, M.A., D.Sc. (Chairman 1940-51).
Sir James Hay Gosse, 1940-52.
Richard Sutton, J.P., 1940-50.

Scientific and Technical Staffs, 1955-56

Administration:

Director: H. M. Hale, O.B.E.
Clerk and Shorthand Typiste: H. C. Speers.
Clerk and Typiste: J. J. Dallwitz.

Anthropology:

Curator: N. B. Tindale, B.Sc.
Assistant Anthropologist: H. M. Cooper.
Assistant: H. E. Burrows.
Shorthand Typiste: Mrs. M. Beswick.

Birds:

Curator: H. T. Condon.

Reptiles:

Curator: F. J. Mitchell.

Fishes:

Assistant Curator: T. D. Scott, M.Sc.

Insects:

Curator: E. T. Giles, Ph.D., M.Sc., D.I.C., F.R.E.S.
Assistant Curator: G. F. Gross, M.Sc., F.R.E.S.
Assistants: V. Richardson.
Mrs. M. Kenny.
J. Golding.

Arachnology:

Acarologist: H. Womersley.
Assistant: Mrs. G. K. Ashby.

Mollusca:

Curator: B. C. Cotton.
Assistant: G. E. Num.

Fossils and Minerals:

Assistant Curator: B. Daily, B.Sc.
Assistant: J. C. Golding.

Preparatorial:

Preparators: A. L. Rau.
P. F. Lawson, A.P.I.A.
Assistant: T. H. J. Chesterfield.
Artist: H. F. Bowshall.
Modeller: Q. G. Harris.
Artisan: L. V. Wills.
Artist and Photographer: M. P. Boyce.
Temporary Artist: P. Catcheside.
Printing Assistant (labels): H. Ellis.

Library:

Librarian: L. M. Johnson.
Assistant: S. H. Hannaford.

Honorary Staff

Anthropology:

Physical Anthropologists: Professor T. D. Campbell, D.Sc., D.D.Sc., F.D.S.R.C.S., Lond., F.D.S.R.C.S., Edin.; Professor A. A. Abbie, Ph.D., F.R.A.C.P., M.D., D.Sc.

Associate in Ethnology: C. P. Mountford, O.B.E.

Mammals:

Curator: H. H. Finlayson.

Fishes, etc.:

Marine Zoologist: K. Sheard, D.Sc.

Arachnology:

Associate in Acarology: R. V. Southcott, M.B., B.S.

Minerals:

Curator: Sir Douglas Mawson, F.R.S., D.Sc., B.E.

Fossils:

Associate: M. F. Glaessner, Ph.D. (Vienna), D.Sc. (Melb.).

Botany:

Botanist: Prof. J. B. Cleland, C.B.E., M.D., Ch.M.
Associate: Alison Ashby.

8

What of the Future?

The South Australian Museum holds outstanding collections, in some sections unexcelled in Australia.

The improvisations and makeshifts which have been practised for half a century and more have reached the stage when drastic action is necessary if South Australia is to maintain in suitable accommodation a natural history museum worthy of the State.

The now archaic plan of the 1870's, illustrated in the architectural drawing facing p. 35, and the sketch of the present layout on p. 187 speak for themselves.

There is no satisfactory alternative to provision of an entirely new Museum building, preferably in a landscaped setting and planned to meet modern requirements. Spacious exhibition floors unencumbered by supporting pillars are required, with allowance for subdivision into small halls of suitable proportions by means of movable partitions, because elasticity of internal arrangements is a vital necessity in modern museum display. A well considered lighting scheme is of paramount importance; suitable and compact working accommodation for carrying out the functions of the institution are essential. Above all, no building plan should be so static as to present difficulties and limitations for future expansion, in keeping with the growth and development of our State. For it is a fact that South Australia after having been for a century one of the poorest States in the Commonwealth is now among the most prosperous, its population increasing at a rapid rate.

No natural history museum can function without a staff of scientific workers. Incoming specimens (unlike, for example, books acquired by a library) are rarely named, and until they are identified, this often entailing description of new species, they cannot be registered and catalogued, and installed in their proper place in the classificatory system. Further, the acquisition of specimens no longer entails the mere collection of material; fuller associated data are assuming greater importance and indeed are demanded by researchers everywhere.

The record of research conducted within the South Australian Museum and in the field is one of which our City and State may be proud. The efforts of the staff during the past half century have vastly increased the usefulness of the collections, but continuation of the policy of providing up-to-date equipment and laboratory facilities is essential if young men are to be attracted to a museum career.

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